BLM LIBRARY
88013155

U. S. Department of the Interior
Bureau of Land Management

Draft

Oregon State Office

April 1985

Oregon Wilderness

Environmental Impact Statement

Volume I - Statewide

QH
76.5
.07
073
1985
v.1

March 3, 1849

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Enclosed for your review and comment is the Draft Environmental Impact Statement (DEIS) prepared on the Oregon statewide wilderness study recommendations. The statement analyzes the impacts that would result from the proposed action and alternatives. The purpose of the statement is to disclose the probable environmental impacts and to assure that those impacts are considered along with economic, technical and other factors in the decisionmaking process.

This draft may be incorporated into the final EIS by reference only. The final EIS would then consist of public comments and responses and any needed changes in the draft. Therefore, please retain this draft EIS for use with the final.

Comments concerning the adequacy of this statement will be considered in the preparation of the final environmental impact statement. The comment period will end August 31, 1985. During the review and comment period, public hearings will be conducted at the following times and locations:

June 18, 1985, 7:00 p.m. to 10:00 p.m., Oregon Room, Medford District Office, 3040 Biddle Road, Medford, Oregon

June 19, 1985, 7:00 p.m. to 10:00 p.m., Curry County Fairgrounds, Gold Beach, Oregon

June 20, 1985, 7:00 p.m. to 10:00 p.m., Public Meeting Room, Klamath County Library, 126 South Third, Klamath Falls, Oregon

June 26, 1985, 7:00 p.m. to 10:00 p.m., Conference Room, Lakeview District Office, 1000 South Ninth Street, Lakeview, Oregon

June 27, 1985, 7:00 p.m. to 10:00 p.m., Harney County Museum Clubroom, 18 West D Street, Burns, Oregon

July 9, 1985, 7:00 p.m. to 10:00 p.m., The Riverhouse, North Highway 97, Bend, Oregon

July 10, 1985, 7:00 p.m. to 10:00 p.m., Courtroom, Gilliam County Courthouse, Condon, Oregon

July 11, 1985, 7:00 p.m. to 10:00 p.m., South Sherman Elementary School, Grass Valley, Oregon

July 16, 1985, 7:00 p.m. to 10:00 p.m., Weese Building, Room W-10, Treasure Valley Community College, Ontario, Oregon

July 17, 1985, 7:00 p.m. to 10:00 p.m., Copper Kitchen Meeting Room, 480 Campbell (just off the Interstate), Baker, Oregon

July 18, 1985, 7:00 p.m. to 10:00 p.m., Hoke Hall, Room 201, Eastern Oregon State College, LaGrande, Oregon

July 23, 1985, 2:00 p.m. to 5:00 p.m. and 7:00 p.m. to 10:00 p.m., Hearing Room/Auditorium, Second Floor, Portland Building, 1120 S.W. Fifth Avenue, Portland, Oregon

July 25, 1985, 7:00 p.m. to 10:00 p.m., City Council Chambers, 777 Pearl Street, Eugene, Oregon

July 30, 1985, 7:00 p.m. to 10:00 p.m., Utah Room, Holiday Inn, 1000 East Sixth Street, Reno, Nevada

An informal open house will be provided for questions and discussion during the hour preceding each public hearing.

Your written comments on the EIS should be sent to:

Wilderness Studies (935)
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Sincerely,

William G. Leavell

William G. Leavell
State Director

QH
76.5
.07
073
1985
v.1

U.S. Department of the Interior
Bureau of Land Management

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

Draft

Oregon Wilderness

Environmental Impact Statement

Volume I - Statewide

Prepared by
U.S. Department of the Interior
Bureau of Land Management

April 1985

William G. Leavell
State Director
Oregon/Washington State Office

Bureau of Land Management
Library
Bldg. 50. Denver Federal Center
Denver, CO 80225

Oregon Wilderness Environmental Impact Statement

Draft (X) Final (   ) EIS

Lead Agency: Department of the Interior, Bureau of Land Management

Cooperating Agency: Department of Agriculture, U. S. Forest Service

A. Type of Action: Administrative ( ) Legislative (X)

B. Abstract: The Bureau of Land Management (BLM) proposes to recommend that 949,989 acres in 41 wilderness study areas (WSAs) are suitable for wilderness designation and 1,354,153 acres are nonsuitable for wilderness designation. The 77 WSAs analyzed are located primarily in eastern Oregon. This document analyzes the environmental consequences of the proposal and six alternatives ranging from all wilderness to no wilderness for the 77 WSAs. It also documents the wilderness study analysis with respect to the BLM planning criteria and quality standards used for determining suitability or nonsuitability for wilderness designation of public lands.

C. The seven alternatives analyzed are:

1. All Wilderness
2. Wilderness Emphasis
3. Conflict Resolution Emphasis
4. Ecosystem Diversity Emphasis
5. Proposed Action
6. Commodity Development Emphasis
7. No Wilderness/No Action

D. The comment period will end on August 31, 1985.

E. Send Comments to:

Wilderness Studies (935)
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

F. For further information, contact:

Jerry Magee, EIS Team Leader
Telephone (503) 231-6867

Summary

The Oregon Wilderness EIS has been prepared pursuant to Section 102(2)(c) of the National Environmental Policy Act (NEPA 1969) and the Council on Environmental Quality (CEQ) Regulations and in conformance with Section 603 of the Federal Land Policy and Management Act (FLPMA 1976) and the BLM Wilderness Study Policy (1982). The 77 Wilderness Study Areas (WSAs) analyzed in this EIS, along with their acreages, are listed in Table 1-1 in Chapter 1.

Alternatives Analyzed in the EIS

Up to five alternatives were analyzed for each WSA in the EIS appendices. All appendices analyzed at least alternatives 1 and 4 of the following:

1. All Wilderness (Entire WSA recommended suitable for wilderness designation.)

2. Enhanced Wilderness (Opportunities to enhance wilderness manageability considered.)

3. Partial (Opportunities to resolve or minimize resource conflicts considered.)

4. No Wilderness/No Action (Current levels of use and management continued.)

5. Preferred Alternative (Usually one of the four preceding alternatives, but in some cases different from all of them.)

For the entire state, the following alternatives were analyzed (acres recommended suitable and nonsuitable for wilderness designation are identified in parentheses):

1. All Wilderness (suitable: 2,304,142 acres; nonsuitable: 0 acres). This alternative recommends designation of all of every WSA as wilderness.

2. Wilderness Emphasis (suitable: 1,959,963 acres; nonsuitable: 344,179 acres). This alternative emphasizes wilderness values over competing resource values.

3. Conflict Resolution Emphasis (suitable: 1,111,741 acres; nonsuitable: 1,192,401 acres). This alternative is designed to moderate conflicts between wilderness designation and other values.

4. Ecosystem Diversity Emphasis (suitable: 1,042,936 acres; nonsuitable: 1,261,206 acres). Suitable recommendations under this alternative are designed to provide representation of all of the ecosystems identified in the Oregon Natural Heritage Plan that fall within Oregon WSAs.

5. Proposed Action (suitable: 949,989 acres; nonsuitable: 1,354,153 acres). This alternative recommends designation of areas considered to be appropriate additions to the NWPS, considering both their wilderness values and enhancement opportunities, as well as conflicts which could be created by such designations.

6. Commodity Development Emphasis (suitable: 336,335 acres; nonsuitable: 1,967,807 acres). This alternative is designed to recommend no areas for designation that would preclude potentially significant commodity production.

7. No Wilderness/No Action (suitable: 0 acres; nonsuitable: 2,304,142 acres). This alternative recommends continuation of current levels of use and management and implementation of existing planning decisions.

Environmental Consequences

Effects on Wilderness Values

Wilderness designation would increase diversity in the National Wilderness Preservation System (NWPS), maintain current wilderness values, and enhance some wilderness values through land acquisition and restoration of disturbed areas. In the absence of wilderness designation, implementation of specific land use proposals and potential development of other resources could impair one or more elements of wilderness value. Thus, the all wilderness alternative would maintain the most wilderness values, while the no wilderness/no action alternative would have the greatest potential for impairment of wilderness values.

Effects on Energy and Mineral Development

Since wilderness designation results in withdrawal of areas from appropriation under the mining and mineral leasing laws, the greatest impacts to energy and mineral resources would occur under the alternatives recommending the largest acreages as suitable for wilderness. The withdrawals are particularly important with regard to those commodities in such short supply that the U.S. relies heavily on imports of them. Wilderness designation would have no significant impacts on energy and mineral development on claims and leases with valid existing rights, however, since such development is permitted under the Wilderness Management Policy (1981).

Effects on Water Quality

Land use constraints associated with wilderness management would result in improved water quality under all alternatives except the commodity development emphasis and no wilderness/no action alternatives, under which water quality is expected to remain approximately the same.

Effects on Vegetation

In the absence of wilderness management constraints on most surfaces disturbing activities, vegetative change would be expected to increase with the amount of acreage not designated as wilderness, thus increasing from the all wilderness alternative to the no wilderness/no action alternative.

Effects on Wildlife

Although wilderness designation, through some wildlife project constraints, would preclude some wildlife population expansion opportunities, implementation of proposed land use activities and potential development of other resources in the absence of wilderness designation would result in greater adverse impacts to most existing wildlife populations. The degree of impact on wildlife populations would increase proportionately with the level of conflicting land use activities allowed, primarily in the nonsuitable areas, from the all wilderness alternative to the no wilderness/no action alternative.

Effects on Livestock Grazing

As a grandfathered right in wilderness areas, livestock grazing at current levels would not be significantly affected by wilderness designation under any of the alternatives. However, some proposed increases in livestock numbers, some development of new range improvements, and implementation of all new vegetative manipulation projects would be precluded under wilderness management. The greatest limitations on more intensive grazing management would occur under the alternatives proposing the largest wilderness acreages.

Effects on Utility Corridor Routing and Communication Facility Siting

Wilderness designation of WSAs would prevent the creation or expansion of utility corridors and communication sites in the wilderness areas. Existing communication sites within WSAs would be unaffected by wilderness designation due to provisions in the BLM Wilderness Management Policy for grandfathered use and maintenance of these facilities. The no wilderness/no action alternative would leave all WSAs open to application for utility corridor and facility site uses. All other alternatives except the all wilderness and wilderness emphasis alternatives place minor constraints on expansion of existing linear facilities by forcing parallel facility construction to the opposite side (from the WSA) of the existing rights-of-way. The all wilderness and wilderness emphasis alternatives require some more substantial rerouting of potential new east-west and north-south utility corridors.

Effects on Wood Products Harvest

Wood products harvest has been planned in only ten WSAs in the EIS area. Harvest of commercial timber and minor forest products would not be significantly impacted over the short or long term from adoption of any alternative, since the harvest foregone under any alternative would be insignificant in relation to the total harvest in Oregon.

Effects on Cultural and Paleontological Resources

Cultural resources would continue to be managed according to specific laws and regulations covering protection of archeological and historic sites, regardless of wilderness area designations. The only potential impacts from wilderness suitability decisions on cultural resources would be indirect, resulting from changes in land use under wilderness management. Also, the wilderness decisions would not cause any specific impacts on particular sites. Since the potential impacts are general and indirect, there would be no significant differences in the effects on cultural resources from the different alternatives.

Effects on Recreation Use

Generally, wilderness designation benefits primitive recreation opportunities while precluding vehicle-oriented recreation opportunities. Since vehicle-oriented recreation use is currently more prevalent in the WSAs and primitive recreation use is not expected to increase substantially after designation in most WSAs, wilderness designation of the majority of the WSAs (as in the all wilderness and wilderness emphasis alternatives) would result in more WSAs experiencing a net decrease in recreation use than those having an increase. Under the other alternatives, more WSAs would experience an increase in recreation use than those having a decrease.

Effects on Economic Value and Local Income

Wilderness designation would cause a decrease in economic value and local personal income in most WSAs. The primary source of this decrease, in most of the WSAs affected as such, would be the loss of oil and gas and geothermal leasing revenues. However, most alternatives would permit an increase in economic value and personal income resulting primarily from greater use of WSAs, or parts of them, not found suitable for designation. These effects would result from use of available but unallocated forage and from structural and vegetative manipulation investments. The probability of any of the alternatives having a substantial effect on the economic future of the region is low.

Effects on Social Conditions

Impacts on social conditions from wilderness decisions include effects on people's economic opportunities, their access to resources they have traditionally used, or the protection afforded a resource or resources they value. The alternatives that incorporate the most trade-offs to allow diverse uses of the public lands (alternatives 3 and 4 especially, alternative 5 to a lesser extent) would be expected to cause the least social impacts. The more extreme alternatives that emphasize certain uses, largely to the exclusion of others (alternatives 1, 2, 6 and 7) would be expected to cause the greatest social impacts.

Table of Contents

Page

Summary v

Chapter 1: Purpose and Need 7
- Introduction and General Location 8
- Purpose of and Need for the Proposed Action 8
- Format of the EIS 8
- Wilderness Review Process 8
- Scoping 12

Chapter 2: Alternatives Including the Proposed Action 15
- Description of the Alternatives Including the Proposed Action 16
- Standard Management Practices and Wilderness Management Policy 17
- Summary of Proposed Management Under Each Alternative 23
- Effects of the Alternatives 25
- Interrelationships with other BLM Studies; Local, State, and Federal Agencies; and Utility Corridor Studies 25

Chapter 3: Affected Environment 35
- Introduction 36
- General Environment 36
- Wilderness Values 37
- Energy and Mineral Development 45
- Water Quality 51
- Wildlife 51

Livestock Grazing ... 53
Utility Corridor Routing and Communication Facility Siting ... 55
Wood Products Harvest ... 57
Cultural and Paleontological Resources ... 57
Recreation Use ... 58
Economic Value and Local Income ... 58
Social Conditions ... 61

Chapter 4: Environmental Consequences ... 63
Introduction ... 64
Assumptions and Analysis Guidelines ... 64
Impact Analysis ... 65
Effects on Wilderness Values ... 65
Effects on Energy and Mineral Development ... 75
Effects on Water Quality ... 75
Effects on Vegetation ... 75
Effects on Wildlife ... 78
Effects on Livestock Grazing ... 79
Effects on Utility Corridor Routing and Communication Facility Siting ... 82
Effects on Wood Products Harvest ... 83
Effects on Cultural and Paleontological Resources ... 83
Effects on Recreation Use ... 84
Effects on Economic Value and Local Income ... 85
Effects on Social Conditions ... 89
Unavoidable Adverse Effects of the Proposed Action ... 90
Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity ... 90
Irreversible and Irretrievable Commitments of Resources ... 90

Chapter 5: Consultation and Coordination ... 91
Public Involvement ... 92
Scoping of Issues and Alternatives ... 92
List of Agencies, Organizations, and Official to Whom Copies of The Statement are Sent ... 98

Addenda

1. Economic Value and Local Personal Income Related to Resource Outputs ... 101
2. Mineral Supply and Commodities Information ... 103
List of Principal Preparers ... 113
Glossary ... 118
References ... 125
Index ... 128

Appendices

Volume II: For WSAs beginning with OR-1,OR-5, OR-11, and OR-12
Volume III: For WSAs beginning with OR-2 (also OR-3-114)
Volume IV: For WSAs beginning with OR-3 and OR-6 (except OR-3-114)

List of Tables

Chapter 1

1-1 Lands Within Wilderness Study Area Boundaries . . . 9
1-2 Management Framework Plans (MFPs) and MFP Amendments (MFP-As) Involving the WSAs . . . 11

Chapter 2

2-1 Relationship Between Statewide and Appendix Alternatives . . . 18
2-2 Acres of Federal Land Recommended Suitable Under Each Alternative . . . 20
2-3 Summary of Proposed Management Under Each Alternative . . . 24
2-4 Comparison of Impacts . . . 26
2-5 Wilderness Study Areas With Designations for Waterpower Potential . . . 30
2-6 Relationship of the Alternatives to LCDC Statewide and Coastal Goals . . . 31
2-7 Consistency of the Alternatives with Basic Objectives of the Forestry Program for Oregon . . . 32
2-8 Consistency of the Alternatives with State of Oregon Wildlife Goals . . . 32

Chapter 3

3-1 Acres of WSAs in this EIS by County . . . 36
3-2 Special Wilderness Features in WSAs . . . 40
3-3 Existing and Potential Wilderness Representing Bailey-Kuchler Ecosystems Found in Oregon WSAs . . . 44
3-4 Population Centers Within 5-Hours' Drive of Oregon WSAs and Existing and Potential Wilderness Areas . . . 46
3-5 Existing and Potential Wilderness Within 100 Miles of Oregon WSAs . . . 47
3-6 Mineral Potential Classifications in the WSAs . . . 49
3-7 Private Sector Mineral Exploration Expenditures in Oregon . . . 51
3-8 Existing and Potential Livestock Use in WSAs . . . 54
3-9 Proposed Range Improvements in WSAs . . . 56
3-10 Commercial Forest Land (CFL) and Yield by WSA . . . 57
3-11 Primary Recreation Activities and Use Levels in the WSAs . . . 59
3-12 Economic Conditions, State and Affected Local Economic Areas . . . 60
3-13 Economic Value and Local Personal Income Generated Annually . . . 61

Chapter 4

4-1 Acres on which Naturalness would be Enhanced by Way and Road Closures . 66
4-2 Special Wilderness Features Included in Areas Recommended Suitable for Wilderness Designation . . . 66
4-3 Number of WSAs with Bailey-Kuchler Ecosystems Included in Areas Recommended Suitable for Wilderness Designation . . . 67
4-4 Oregon Natural Heritage Plan Vegetative Communities Included in Areas Recommended Suitable for Wilderness Designation . . . 68
4-5 Acres Recommended Suitable for Wilderness Within 5-Hours' Drive of Population Centers . . . 71
4-6 Acres Directly Affected by Proposed Activities in Areas Recommended Nonsuitable for Wilderness Designation . . . 72

4-7 Acres of Moderate or High Energy and Mineral Potential in Area Recommended Nonsuitable for Wilderness Designation 74
4-8 Miles of Potential Utility Corridors Within Area Recommended Nonsuitable for Wilderness Designation 74
4-9 Acres of High Mineral Potential in Nominated ACMPs that would be Withdrawn by Wilderness Designation 76
4-10 Acres of High Mineral Potential Withdrawn by Wilderness Designation 76
4-11 Acres of Moderate Mineral Potential Withdrawn by Wilderness Designation 77
4-12 Proposed Range Improvements which could be Precluded by Wilderness Designation 80
4-13 Maximum AUMs of Licensed Livestock Forage Foregone in Allotments 81
4-14 Increased Costs of Alternative Utility Routing to Bypass Designated Wilderness 83
4-15 Short-Term Losses to Commercial Timber Production 84
4-16 Losses to Minor Forest Products 84
4-17 Net Effects of the Alternatives on Recreation Use in WSAs 85
4-18 Effects of Alternatives on Annual Economic Value 86
4-19 Effects of Alternatives on Investments 87
4-20 Effects of Alternatives on County and Federal Government Revenues 88
4-21 Effects of Alternatives on Local Personal Income 88
4-22 Estimated Changes in Local Personal Income and Employment 89

Addenda

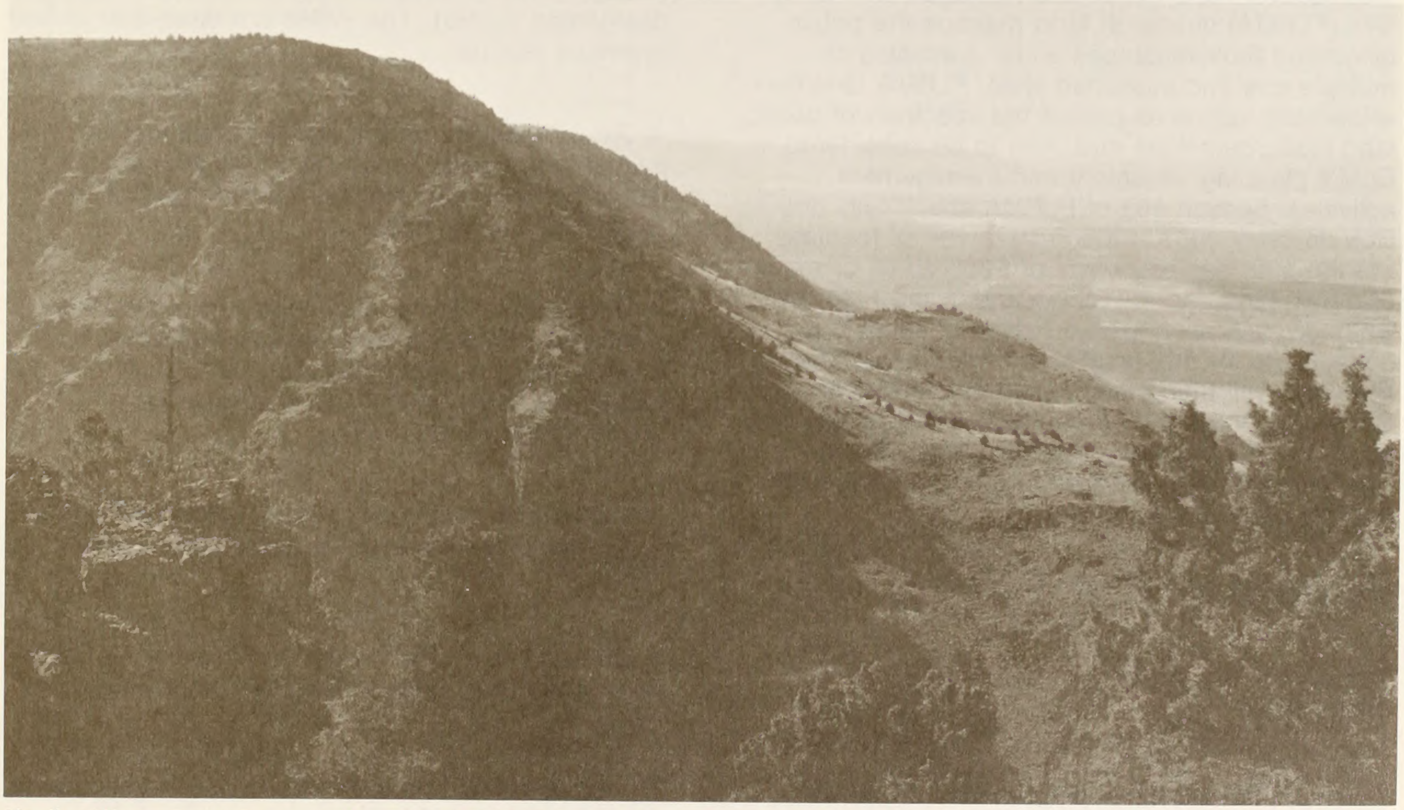
A-1 Economic Value and Local Personal Income Per Unit of Output 101
A-2 Mineral Commodity Summary 104

List of Maps

1 State of Oregon, Wilderness Status Map (Location Map)
2 Wilderness Emphasis Alternative
3 Conflict Resolution Emphasis Alternative
4 Ecosystem Diversity Emphasis Alternative
5 Proposed Action
6 Commodity Development Emphasis Alternative
7 Existing and Proposed Utility Corridors In or Near the WSAs

Chapter 1

Purpose and Need



Mouth of Home Creek Canyon in Home Creek WSA (OR-2-85H)

Introduction and General Location

The area considered in the Oregon Wilderness Environmental Impact Statement (EIS) includes 77 wilderness study areas totaling 2,304,142 acres (see table 1-1) and an additional 23,985 acres of public land adjacent to some of the WSAs that is considered for wilderness designation in at least one alternative. The WSAs are located primarily in eastern Oregon with the greatest concentration in southeastern Oregon (see map 1).

Two Nevada WSAs located along the Oregon/Nevada border are included in this study and incorporated into the adjoining Oregon WSAs. Nevada's Pueblo Mountains (NV-020-642) and Disaster Peak (NV-020-859) WSAs are being studied as part of Oregon's Pueblo Mountains (OR-2-81) and Disaster Peak (OR-3-153) WSAs, respectively. In addition, the U.S. Forest Service's Homestead Further Planning Area is similarly included in the study of BLM's Homestead WSA (OR-6-2) in accordance with the 1981 USFS/BLM Cooperative Agreement for joint wilderness studies.

Purpose of and Need for the Proposed Action

The Federal Land Policy and Management Act of 1976 (FLPMA) directs BLM to manage the public lands and their resources under principles of multiple use and sustained yield. FLPMA identifies wilderness values as part of the spectrum of public land resource values and uses to be considered in BLM's planning, inventory and management activities. Section 603 of FLPMA specifically directs BLM to carry out a wilderness review of roadless islands and roadless areas of 5,000 acres or more of public land and to recommend to the President whether each such area or island is suitable or nonsuitable for preservation as wilderness. The President will then make recommendations to Congress. Areas will be designated wilderness only by an act of Congress. The purpose of the recommendations analyzed in this EIS is to carry out this mandate of FLPMA.

Format of the EIS

The draft EIS is comprised of two types of documents.

An EIS appendix has been prepared for each wilderness study area or for a set of study areas. A set of study areas is included in a single appendix where at least one of the alternatives considers merging them into a single wilderness area. Also, the two island WSAs are addressed in a single appendix, because of their similarity and small size. Each appendix describes the study area(s) and analyzes the environmental consequences of a range of wilderness and nonwilderness alternatives. The appendices are bound into three volumes.

This statewide volume assesses the environmental consequences from a statewide perspective by analyzing an array of statewide alternatives incorporating all WSA specific alternatives addressed in the appendices. A range of alternatives, extending from recommendation of all of the areas for wilderness designation to recommendation of none of them, is considered in the EIS.

Wilderness Review Process

The 77 wilderness study areas (WSAs) analyzed in this EIS were identified during the wilderness inventory, the first of three steps in the wilderness review. The inventory process is described in the Wilderness Inventory Handbook (1978). In the inventory, roadless areas and islands were designated WSAs if they met the definition of wilderness in Section 2(c) of the Wilderness Act. The inventory began in 1978 and was completed at various dates for different WSAs. The last WSA was designated in 1981. The WSAs are described in four inventory reports:

- Final Decisions on the Intensive Wilderness Inventory of Public Lands Along the Proposed Route of the Alaska Natural Gas Transportation System (February 1980).
- Wilderness Review - Intensive Inventory: Final Decisions on 30 Selected Units in Southeast Oregon and Proposed Decisions on Other Intensively Inventoried Units in Oregon and Washington (March 1980).
- Wilderness Inventory - Oregon and Washington: Final Intensive Inventory Decisions (November 1980).
- Stateline Intensive Wilderness Inventory Final Decisions: Oregon-Idaho-Nevada-Utah (November 1981).

The study areas and the acres of land in each area are listed in table 1-1.

Table 1-1. Lands Within Wilderness Study Area Boundaries

WSA No. (OR-)	WSA Name	Acres BLM	Acres Other Federal	Acres Split Estate	Acres State	Acres Private	Total Acres
1-2	Devils Garden Lava Bed	28,720					28,720
1-3	Squaw Ridge Lava Bed	27,700		320		320	28,340
1-22	Four Craters Lava Bed	11,960					11,960
1-24	Sand Dunes	16,000					16,000
1-58	Diablo Mountain	107,920		4,102	640	1,170	113,850
1-78	Orejana Canyon	24,600					24,600
1-101	Abert Rim	23,280					23,280
1-117	Fish Creek Rim	16,070					16,070
1-132	Guano Creek	10,350					10,350
1-139	Spaulding	69,530				120	69,650
1-146	Hawk Mountain	68,360		1,280			69,640
2-14	Malheur River-Bluebucket Creek	5,560					5,560
2-23L	Stonehouse	21,000		320		920	22,240
2-23M	Lower Stonehouse	8,090				160	8,250
2-72C	Sheepshead Mountains	51,120		2,560		40	53,720
2-72D	Wildcat Canyon	32,720		640			33,360
2-72F	Heath Lake	20,100					20,100
2-72I	Table Mountain	38,600		640			39,240
2-72J	West Peak	7,900					7,900
2-73A	East Alvord	21,600		640			22,240
2-73H	Winter Range	14,800		640			15,440
2-74	Alvord Desert	111,690		4,480			116,170
2-77	Mahogany Ridge	27,210		400		1,520	29,130
2-78	Red Mountain	14,730				80	14,810
2-81	Pueblo Mountains	69,310[1]		1,920			71,230
2-82	Rincon	97,545		5,120		120	102,785
2-83	Alvord Peak	14,655		560		80	15,295
2-84	Basque Hills	137,220		2,560		320	140,100
2-85F	High Steens	65,420		240		2,165	67,825
2-85G	S. Fk. Donner & Blitzen R.	35,850		1,280		1,320	38,450
2-85H	Home Creek	25,120		640		75	25,835
2-86E	Blitzen River	51,890		680		680	53,250
2-86F	Little Blitzen Gorge	9,240					9,240
2-87	Bridge Creek	14,060		480		40	14,580
2-103	Aldrich Mountain	9,395					9,395
3-18	Castle Rock	5,560		640			6,200
3-27	Beaver Dam Creek	19,140					19,140
3-31	Camp Creek	18,360					18,360
3-32	Cottonwood Creek	8,500					8,500
3-33	Gold Creek	12,920					12,920
3-35	Sperry Creek	5,360					5,360
3-47	Cedar Mountain	31,440		1,280		80	32,800
3-53	Dry Creek	22,540		640			23,180
3-56	Dry Creek Buttes	49,880		1,280			51,160
3-59	Owyhee Breaks	13,100				360	13,460
3-73	Blue Canyon	12,700				40	12,740
3-75	Slocum Creek	7,600					7,600
3-77A	Honeycombs	39,000					39,000
3-77B	Wild Horse Basin	12,100				40	12,140
3-110	Lower Owyhee Canyon	71,940		1,160		1,180	74,280
3-111	Saddle Butte	81,300		1,920			83,220
3-114	Palomino Hills	50,560		640			51,200
3-118	Bowden Hills	56,140		1,920			58,060
3-120	Clarks Butte	31,450					31,450
3-128	Jordan Craters	27,560				80	27,640
3-152	Willow Creek	28,810		640		880	30,330
3-153	Disaster Peak	30,490[2]				40	30,530
3-156	Fifteenmile Creek	48,460		1,930			50,390
3-157	Oregon Canyon	40,400		1,920			42,320
3-162	Twelvemile Creek	26,960		440		360	27,760

Table 1-1. Lands Within Wilderness Study Area Boundaries (continued)

WSA No. (OR-)	WSA Name	Acres BLM	Acres Other Federal	Acres Split Estate	Acres State	Acres Private	Total Acres
3-173	Upper W. Ltl. Owyhee	58,660		3,840			62,500
5-1	Thirtymile	7,538					7,538
5-6	Lower John Day	19,352				160	19,512
5-8	North Pole Ridge	6,249				240	6,489
5-9	Spring Basin	5,982				40	6,022
5-21	Badlands	32,221				40	32,261
5-31	North Fork	10,745				480	11,225
5-33	South Fork	19,391				440	19,831
5-34	Sand Hollow	8,091					8,091
5-35	Gerry Mountain	19,980		640			20,620
5-42	Hampton Butte	10,600					10,600
5-43	Cougar Well	17,315		1,120		800	19,235
6-2	Homestead	6,321	7,654			320	14,295
6-3	Sheep Mountain	7,040				200	7,240
11-17	Soda Mountain	5,410					5,410
12-8	N. Sisters Rock	3					3
12-14	Zwagg Island	5					5
	TOTAL	2,296,488	7,654	49,530	640	14,910	2,369,222

[1] Includes Nevada's Pueblo Mountain WSA (NV-020-642) totaling 600 acres.
[2] Includes Nevada's Disaster Peak WSA (NV-020-859) totaling 13,200 acres.

The next step in the wilderness review process is the wilderness study. The analysis in this draft EIS is a part of the study. During the study phase, the benefits of preserving a WSA's wilderness values are compared with the benefits of managing the area for other purposes, such as development of minerals and intensive range development. The outcome of this weighing and balancing will be a set of preliminary recommendations by the BLM State Director as to which areas are recommended for wilderness designation.

The wilderness planning criteria and quality standards used to arrive at the preliminary wilderness suitability and nonsuitability recommendations are described in the Wilderness Study Policy, published in the Federal Register on February 3, 1982. Copies of the study policy can be obtained from the BLM Oregon State Office or from any district office which manages WSAs.

BLM district managers began the wilderness study by comparing the benefits of wilderness and nonwilderness management in a series of land use plans. The land use plans used in the study in Oregon are called management framework plans (MFPs). In some cases, new MFPs were prepared; whereas in others, existing MFPs were amended. The names of the MFPs or MFP amendments that address the WSAs, and the dates they were completed, are listed in table 1-2.

BLM held 25 public meetings to discuss alternatives considered in the MFPs and MFP amendments. After consideration of public comments, the district managers concluded the land use planning and submitted their preliminary wilderness suitability and nonsuitability recommendations to the State Director.

With the receipt of the preliminary recommendations, work began on this draft EIS. Fourteen public meetings were held across the state between December 1982 and March 1983 to identify issues and alternatives which the public felt should be analyzed in the EIS. After scoping, the district managers and State Director selected the preferred alternative for the draft EIS. Among the information they considered were the district managers' preliminary recommendations, information on energy and mineral potential received after the MFP and MFP amendments were completed, and the extent to which designation of the WSAs as wilderness would increase the diversity of units of the National Wilderness Preservation System.

Following public review and comment on this draft EIS, the State Director will decide whether to retain or revise his preliminary wilderness suitability and nonsuitability recommendations for the WSAs. A preliminary version of the final EIS and draft wilderness study reports on each WSA will be prepared and sent to BLM's Director. The draft reports will include a summary of the

Table 1-2. Management Framework Plans (MFPs) and MFP Amendments (MFP-As) Involving the WSAs

MFP or MFP-A Name	Date Completed	District	WSAs Involved (OR-)
Brothers	1982	Prineville	5-21, Badlands 5-31, North Fork 5-33, South Fork 5-34, Sand Hollow 5-35, Gerry Mountain 5-42, Hampton Butte 5-43, Cougar Well
Andrews	1982	Burns	1-146, Hawk Mountain [1] 2-14, Malheur R.-Bluebucket Creek [1] 2-23L, Stonehouse [1] 2-23M, Lower Stonehouse 2-77, Mahogany Ridge 2-78, Red Mountain 2-81, Pueblo Mountains 2-82, Rincon [1] 2-83, Alvord Peak 2-84, Basque Hills [1] 2-85F, High Steens 2-85G, South Fork of the Donner und Blitzen 2-85H, Home Creek 2-86E, Blitzen River 2-86F, Little Blitzen Gorge 2-87, Bridge Creek
Northern Malheur Amendment	1982	Vale	3-18, Castle Rock 3-27, Beaver Dam Creek 3-31, Camp Creek 3-32, Cottonwood Creek 3-33, Gold Creek 3-35, Sperry Creek 3-47, Cedar Mountain 3-53, Dry Creek 3-56, Dry Creek Buttes 3-59, Owyhee Breaks [1] 3-73, Blue Canyon 3-75, Slocum Creek 3-77A, Honeycombs 3-77B, Wild Horse Basin
Southern Malheur	1982	Vale	3-110, Lower Owyhee Canyon [1] 3-111, Saddle Butte 3-114, Palomino Hills 3-118, Bowden Hills 3-120, Clarks Butte 3-128, Jordan Craters [1] 3-152, Willow Creek [1] 3-153, Disaster Peak [1] 3-156, Fifteenmile Canyon 3-157, Oregon Canyon 3-162, Twelvemile Canyon 3-173, Upper West Little Owyhee 2-72C, Sheepshead Mountains [1] 2-72D, Wildcat Canyon [1] 2-72F, Heath Lake [1] 2-72I, Table Mountain [1] 2-72J, West Peak [1] 2-73A, East Alvord [1] 2-73H, Winter Range [1] 2-74F, Alvord Desert [1]
High Desert Amendment [2]	1983	Lakeview	1-2, Devils Garden Lava Bed 1-3, Squaw Ridge Lava Bed 1-22, Four Craters Lava Bed 1-24, Sand Dunes 1-58, Diablo Mountain

Table 1-2. Management Framework Plans (MFPs) and MFP Amendments (MFP-As) Involving the WSAs (continued)

MFP or MFP-A Name	Date Completed	District	WSAs Involved (OR-)
Warner Lakes Amendment [2]	1983	Lakeview	1-78, Orejana Canyon 1-101, Abert Rim [1] 1-117, Fish Creek Rim 1-132, Guano Creek 1-139, Spaulding
John Day Amendment [2]	1983	Burns	2-103, Aldrich Mountain
Baker Amendment [2]	1983	Vale	6-2, Homestead 6-3, Sheep Mountain
John Day River Amendment [2]	1983	Prineville	5-1, Thirtymile 5-6, Lower John Day 5-8, North Pole Ridge 5-9, Spring Basin
Jackson-Klamath Amendment [2]	1983	Medford	11-1, Soda Mountain
South Coast-Curry Amendment [2]	1983	Coos Bay	12-8, North Sisters Rocks 12-14, Zwagg Island

[1] Part or all of this WSA is in an adjacent planning area, but the wilderness study is included in the planning document indicated in this table.
[2] Alternative wilderness suitability and nonsuitability recommendations for WSAs in this MFP amendment were described in a December 1982 publication, "Wilderness Studies - Management Framework Plan Amendments: Summary of Land Use Alternatives."

recommendation, the environmental consequences of alternatives analyzed in the EIS, and comments received.

Submission of the preliminary version of the final EIS and the draft study reports to the Director will mark the beginning of the third, and final, step of the wilderness review--reporting. The Director will continue the review by asking the U.S. Geological Survey and Bureau of Mines to conduct mineral surveys on all areas preliminarily recommended as suitable for wilderness. The surveys are required by a provision of FLPMA. After reports on the mineral surveys are completed, the preliminary suitable recommendations will be reconsidered in light of the information in the reports, and then final suitability and nonsuitability recommendations will be submitted to the Secretary of the Interior.

The final recommendations will be incorporated in the final EIS, and the final EIS will be printed and distributed. The data in the mineral reports will be summarized in the study reports, which will then be transmitted to the President. The President, in turn, will submit his recommendations and the study reports to Congress. FLPMA requires the Secretary of the Interior to submit his recommendations to the President by October 26, 1991, and the President then has two years to submit his recommendations to Congress.

Scoping

Scoping is the early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. Scoping eliminates from detailed study the insignificant issues or issues addressed in earlier environmental reviews.

Solicitation of public comments to assist the Bureau in scoping the EIS began in December of 1982. The public comment period lasted until March 1, 1983. During this period, public meetings were held in ten eastern Oregon towns and four towns and cities in western Oregon to solicit comments on the scope of the EIS. Over 400 people attended the meetings, and many persons also submitted written comments.

Chapter 5 contains a summary of the scoping results, including a list of issues raised and addressed in the EIS, as well as "issues" raised but not addressed and the reasons for not addressing them. The summary also discusses the various alternatives developed as a result of scoping and explains why some suggested alternatives are not analyzed.

The interdisciplinary team and resource managers considered the areas of public interest and concern identified through scoping. The team used the scoping process to determine which concerns would be significantly impacted by the proposed action or alternatives. (The specific issues associated with these concerns are addressed in this statewide volume or in the pertinent WSA-specific appendices.)

The scoping process identified the following relevant areas of significant concern:

Wilderness Values: Concerns have been expressed regarding proposed and potential land use activities causing reduction or loss of the WSAs' natural values, opportunities for solitude and primitive recreation, and special wilderness features (such as cultural and geologic resources, plants and animals of special interest, and others) in the absence of wilderness designation. Further concerns involve foregone opportunities to contribute to the diversity of the NWPS (ecosystem diversity, geographic distribution, and proximity of wilderness opportunities to population centers) if the areas are not designated as wilderness.

Ecosystems and Vegetation: Management under wilderness designation or nondesignation could result in impacts to vegetative composition, watershed values, and ecological systems. Specific concern was raised over the effects of wilderness designation on fire incidence and the use of fire as a management tool, as these factors relate to ecosystems and vegetation.

Economic Value and Local Personal Income: Management under wilderness designation and nondesignation would have varying economic effects in terms of local income levels and overall economic values, although many values associated with wilderness are difficult to measure in economic terms. Economic concerns include production losses, foregone production increases, and increased production costs.

Livestock Grazing: There are concerns about impacts to primary wilderness values and special features from proposed livestock grazing increases and range improvement projects. At the same time, there are demands for increased forage production from the livestock industry. The Wilderness Management Policy allows implementation of livestock projects if they are needed to better protect rangeland or wilderness resources, rather than to accommodate increased numbers of livestock. Some livestock increases could be allowed if land management plans reveal conclusively that wilderness values would not be impaired. These wilderness management guidelines would limit the number of range developments built and the amount of grazing increases allowed in wilderness areas.

Energy and Mineral Development: This issue involves concerns over the effects of wilderness designation on opportunities for energy and mineral development and opposing concerns over the effects of energy and mineral development on wilderness values. Wilderness designation would withdraw lands from new energy and mineral exploration and development. On the other hand, wilderness management allows for continued development of existing claims and mineral leases with valid existing rights. There has been relatively little energy and mineral development on BLM lands in eastern Oregon, both within and outside the WSAs. In addition, only limited data exist on minerals occurring on BLM lands in eastern Oregon. However, studies of the WSAs indicate some favorability for occurrence of numerous mineral commodities and energy resources.

Utility Corridor Routing: This issue involves the routing of potential utility corridors near or through the WSAs. Concerns include potential impairment of wilderness values along corridor routes if utility line development occurs in WSAs not designated as wilderness. There are also concerns over precluding utility line development through WSAs designated as wilderness, which could result in some increased construction and maintenance costs from increased route length if the utility lines are actually constructed.

Timber Production: Concerns range from precluded timber harvest under wilderness designation in the few WSAs containing commercial forest land to impairment of wilderness values from timber production in those areas not designated as wilderness.

Recreation Use: This issue involves changes in kinds of recreation activity and levels of use as a result of wilderness designation. There are concerns that wilderness designation would displace or reduce vehicle-oriented recreation use and constrain recreational facility development. On the other hand, wilderness designation would maintain primitive recreation opportunities in the most remote areas and increase such opportunities in areas currently utilized for vehicle-oriented recreation.

Management of Adjacent Lands: Although wilderness designation would not directly affect management of adjacent lands, concerns have been raised regarding increased pressure on such lands from activities that would be precluded or constrained in the wilderness. Other concerns involve access to and potential exchange of adjacent private lands as well as state and private inholdings.

Wildlife: Although wilderness designation could benefit or maintain wildlife habitat conditions through constraints on resource development activities and restoration of closed vehicle ways (vehicle routes established and maintained solely by the passage of vehicles), to a natural condition, there is some concern that potential constraints on wildlife projects could inhibit some habitat improvement or attempts to reintroduce wildlife.

Chapter 2

Alternatives Including the Proposed Action

Aspen Grove in Lower Stonehouse WSA (OR-2-23M)

Description of the Alternatives Including the Proposed Action

There are two sets of alternatives analyzed in the EIS: the WSA-specific alternatives evaluated in the individual EIS appendices for each WSA and the statewide alternatives.

In the EIS appendices, the array of alternatives for each WSA includes at least No. 1 and No. 4, and often others, of the following (the number of WSAs for which a particular alternative has been developed is in parentheses):

1. All Wilderness (all 77 WSAs). This alternative analyzes designation of the entire WSA for preservation as wilderness.

2. Enhanced Wilderness (38 WSAs). This alternative is analyzed where there is an opportunity to enhance wilderness manageability for a WSA, through such means as closure of dead-end roads, acquisition of inholdings, merging with adjacent study areas by closing boundary roads and, in a few cases, adding areas of land outside study areas. In WSAs with areas of substantial potential management problems, this alternative may propose excluding the problem areas as a means of enhancing wilderness values in the remaining area.

3. Partial (32 WSAs). A partial alternative is analyzed where there is an opportunity to minimize conflicts by recommending only a portion of a study area as suitable for wilderness designation. In some cases this alternative also includes measures to enhance wilderness values when such measures substantially differ from the enhanced wilderness alternative.

4. No Wilderness/No Action (all 77 WSAs). This alternative analyzes continuation of current levels of use and management in the absence of the interim management policy for lands under wilderness review. It represents the way the land would be used as envisioned in officially adopted planning decisions.

5. Preferred Alternative (developed as a separate alternative for 17 WSAs). For most WSAs the preferred alternative is one of the four described above. For some WSAs, however, the preferred alternative is a different alternative specifically designed by the District Manager in an attempt to better address all conflict issues and enhancement opportunities while recognizing important wilderness values.

The statewide alternatives incorporate all alternatives developed in the appendices for the individual WSAs. However, the statewide alternatives are not simple aggregations of the WSA-specific alternatives. A different set of alternatives was developed for the entire state, partly to respond, in an aggregate fashion, to certain issues not brought into focus by the WSA-specific alternatives and partly because the WSA-specific appendices do not each address the same full set of alternatives. Thus, the WSA-specific alternatives are not meaningfully additive.

For example, addition of the WSA-specific enhanced alternatives would result in a statewide alternative recommending designation of parts of 38 WSAs and none of the remaining 39, regardless of the relevance of other factors to the question of the appropriate level of designation. Development of such an alternative would not contribute to effective comment on and analysis of the question.

The proposed action, alternative 5, adopts the preferred alternative of each WSA. Alternatives 2, 3, 4, and 6 are modifications of the proposed action, developed by sometimes substituting WSA-specific alternatives different than the preferred in order to strengthen emphasis on a particular element (e.g., wilderness, commodity development, etc.).

For the entire state the following alternatives are analyzed (acres that would be recommended suitable and nonsuitable for designation are in parentheses):

1. All Wilderness (suitable: 2,304,142 acres in 77 WSAs; nonsuitable: 0 acres). This alternative analyzes designation of the entire area of every WSA as wilderness (see map 1).

2. Wilderness Emphasis (suitable: 1,959,963 acres in 70 WSAs; nonsuitable: 344,179 acres). This alternative is designed to emphasize wilderness (see map 2). It differs from the proposed action by using, in lieu of the preferred alternative, the enhanced wilderness alternative of each WSA that has one. For WSAs without an enhanced wilderness alternative, it uses any partial alternative that would recommend more wilderness area than the preferred alternative. Otherwise, it uses the preferred alternative. For three WSAs (Sand Dunes, OR-1-24, Aldrich Mountain, OR-2-103, and Soda Mountain, OR-11-17) that have no enhanced wilderness or partial alternative, but are considered

important potential elements of wilderness diversity, the all wilderness alternative is used in lieu of the preferred alternative.

This alternative includes the no wilderness/no action alternative for some WSAs, namely those 1) not recommended at all for designation in the preferred alternative, and 2) lacking special values that warrant an enhanced wilderness or partial alternative or that would make them significant potential elements of wilderness diversity.

3. Conflict Resolution Emphasis (suitable: 1,111,741 acres in 50 WSAs; nonsuitable: 1,192,401 acres). This alternative is designed to moderate conflicts between wilderness designation and other values (see map 3). This alternative adopts the partial alternative of each WSA that has one. Otherwise, it adopts the preferred alternative.

4. Ecosystem Diversity Emphasis (suitable: 1,042,936 acres in 48 WSAs; nonsuitable: 1,261,206 acres). This alternative is designed to provide, within the aggregate area recommended for designation, a representation of each ecosystem identified in the Oregon Natural Heritage Plan that falls within any BLM WSA in eastern Oregon (see map 4). It adopts the all wilderness alternative in lieu of the preferred alternative for those WSAs that provide the best cross-section of ecosystems not represented in the preferred alternative.

5. The BLM Proposed Action (suitable: 949,989 acres in 41 WSAs; nonsuitable: 1,354,153 acres). This statewide alternative adopts the preferred alternative of each WSA (see map 5). As such, it recommends designation of those WSAs and portions of WSAs which BLM considers appropriate additions to the National Wilderness Preservation System, considering both their wilderness values and enhancement opportunities, as well as conflicts which could be created by such designations. It is intended to protect the highest quality wilderness values and optimize wilderness manageability, while allowing for utilization of moderate to high value competing resources. Note that the preferred alternative for each WSA may be all wilderness, enhanced wilderness, partial, no wilderness/no action, or another alternative, different from any of these, labeled the "preferred alternative."

6. Commodity Development Emphasis (suitable: 336,335 acres in 17 WSAs; nonsuitable; 1,967,807 acres). This alternative is designed to recommend no areas for designation that would preclude potentially important commodity production (see map 6). It adopts the no wilderness/no action alternative of each WSA where the preferred alternative would lead to foregoing mineral development on lands of moderate or high mineral potential or would lead to foregoing significant livestock grazing values. In practice, application of the mineral development screen also screened out all substantial livestock grazing conflicts.

7. No Wilderness/No Action (suitable: 0 acres; nonsuitable: 2,304,142 acres). This alternative analyzes continuation of current levels of use and management and implementation of existing planning decisions.

Detailed descriptions of the alternatives for each WSA are in the individual appendices. Table 2-1 shows how the WSA-specific alternatives are aggregated under each statewide alternative to analyze the statewide impacts. Table 2-2 presents the acreages recommended suitable for wilderness designation, by WSA, under each statewide alternative.

Other alternatives were considered for analysis in this EIS, but were rejected for reasons identified in the Formulation of Alternatives section in Chapter 5.

Standard Management Practices and Wilderness Management Policy

Certain standard management practices directed by regulations, policy and manuals would apply to all alternative management programs. Protection of soils, watershed, visual resources, air quality, and other resources is required by the Federal Land Policy and Management Act of 1976. Specific guidance for these measures is embodied in numerous policy statements and regulations. Specific legislation, such as the Endangered Species Act and the Antiquities Act, also governs management under all alternatives.

BLM adopted a wilderness management policy in September 1981. It served as one of the principal bases for the analyses in this EIS.

The policy is based on guidance found in the Wilderness Act of 1964 and the Federal Land Policy and Management Act, which direct BLM to preserve the wilderness character of designated areas and to provide opportunities for people to use the areas. Generally, these "accepted" uses will not impair wilderness values. However, Congress also has said certain "nonconforming" uses may occur in

Table 2-1. Relationship Between Statewide and Appendix Alternatives [1] [2]

WSA No. (OR-)	WSA Name	Alt. 1 All Wilderness	Alt. 2 Wilderness Emphasis	Alt. 3 Conflict Resolution Emphasis	Alt. 4 Ecosystem Diversity Emphasis	Alt. 5 Proposed Action	Alt. 6 Commodity Development Emphasis
1-2	Devils Garden Lava Bed	A	E	P	P	P	P
1-3	Squaw Ridge Lava Bed	A	P	P	P	P	P
1-22	Four Craters Lava Bed	A	Pr	P	Pr	Pr	Pr
1-24	Sand Dunes	A	A	O	A	O	O
1-58	Diablo Mountain	A	E	P	P	P	O
1-78	Orejana Canyon	A	P	P	P	P	P
1-101	Abert Rim	A	A	A	A	A	O
1-117	Fish Creek Rim	A	E	P	P	P	O
1-132	Guano Creek	A	P	P	P	P	P
1-139	Spaulding	A	P	P	O	O	O
1-146	Hawk Mountain	A	A	P	A	A	A
2-14	Malheur River-Bluebucket Cr.	A	A	A	A	A	A
2-23L	Stonehouse	A	P	P	O	O	O
2-23M	Lower Stonehouse	A	P	P	O	O	O
2-72C	Sheepshead Mtns.	A	E	Pr	Pr	Pr	O
2-72D	Wildcat Canyon	A	E	Pr	Pr	Pr	O
2-72F	Heath Lake	A	E	O	O	O	O
2-72I	Table Mountain	A	E	Pr	Pr	Pr	O
2-72J	West Peak	A	E	O	O	O	O
2-73A	East Alvord	A	E	Pr	Pr	Pr	O
2-73H	Winter Range	A	O	O	O	O	O
2-74	Alvord Desert	A	E	Pr	Pr	Pr	O
2-77	Mahogany Ridge	A	E	O	O	O	O
2-78	Red Mountain	A	E	O	O	O	O
2-81	Pueblo Mountains	A	E	P	P	P	O
2-82	Rincon	A	E	P	P	P	P
2-83	Alvord Peak	A	E	O	O	O	O
2-84	Basque Hills	A	E	O	O	O	O
2-85F	High Steens	A	E	P	Pr	Pr	O
2-85G	S. Fk. Donner & Blitzen R.	A	E	O	O	O	O
2-85H	Home Creek	A	P	P	P	P	P
2-86E	Blitzen River	A	E	P	Pr	Pr	Pr
2-86F	Little Blitzen Gorge	A	E	P	Pr	Pr	O
2-87	Bridge Creek	A	O	O	O	O	O
2-103	Aldrich Mountain	A	A	O	A	O	O
3-18	Castle Rock	A	E	O	O	O	O
3-27	Beaver Dam Creek	A	O	O	O	O	O
3-31	Camp Creek	A	E	P	P	P	O
3-32	Cottonwood Creek	A	E	P	P	P	O
3-33	Gold Creek	A	E	O	O	O	O
3-35	Sperry Creek	A	E	O	O	O	O
3-47	Cedar Mountain	A	E	O	A	O	O
3-53	Dry Creek	A	E	O	O	O	O
3-56	Dry Creek Buttes	A	O	O	O	O	O
3-59	Owyhee Breaks	A	E	O	O	O	O
3-73	Blue Canyon	A	O	O	O	O	O
3-75	Slocum Creek	A	O	O	O	O	O
3-77A	Honeycombs	A	P	P	P	P	O
3-77B	Wild Horse Basin	A	O	O	O	O	O
3-110	Lower Owyhee Canyon	A	E	P	P	P	O
3-111	Saddle Butte	A	P	P	O	O	O
3-114	Palomino Hills	A	E	O	O	O	O
3-118	Bowden Hills	A	P	P	O	O	O
3-120	Clarks Butte	A	P	P	O	O	O
3-128	Jordan Craters	A	E	P	P	P	P
3-152	Willow Creek	A	Pr	Pr	Pr	Pr	O
3-153	Disaster Peak	A	Pr	Pr	Pr	Pr	O
3-156	Fifteenmile Creek	A	Pr	Pr	Pr	Pr	O
3-157	Oregon Canyon	A	Pr	Pr	Pr	Pr	O
3-162	Twelvemile Creek	A	Pr	Pr	Pr	Pr	O

Table 2-1. Relationship Between Statewide and Appendix Alternatives [1] [2] (continued)

WSA No. (OR-)	WSA Name	Alt. 1 All Wilderness	Alt. 2 Wilderness Emphasis	Alt. 3 Conflict Resolution Emphasis	Alt. 4 Ecosystem Diversity Emphasis	Alt. 5 Proposed Action	Alt. 6 Commodity Development Emphasis
3-173	Upper W. Ltl. Owyhee	A	E	E	E	E	E
5-1	Thirtymile	A	Pr	P	Pr	Pr	O
5-6	Lower John Day	A	Pr	P	Pr	Pr	Pr[3]
5-8	North Pole Ridge	A	Pr	P	Pr	Pr	O
5-9	Spring Basin	A	P	P	A	O	O
5-21	Badlands	A	P	P	P	P	P
5-31	North Fork	A	E	O	A	O	O
5-33	South Fork	A	E	E	E	E	O
5-34	Sand Hollow	A	E	E	E	E	O
5-35	Gerry Mountain	A	P	P	O	O	O
5-42	Hampton Butte	A	E	O	O	O	O
5-43	Cougar Well	A	E	O	O	O	O
6-2	Homestead	A	P	P	A	O	O
6-3	Sheep Mountain	A	E	E	E	E	E
11-17	Soda Mountain	A	A	O	A	O	O
12-8	N. Sisters Rocks	A	A	A	A	A	A
12-14	Zwagg Island	A	A	A	A	A	A

[1] The appendix alternatives include all wilderness (A), enhanced wilderness (E), partial (P), preferred (Pr), and no wilderness/no action (0). Note that the Proposed Action column lists the preferred alternative for each WSA, A, E, P or O, or Pr which refers to an alternative that was different from A, E, P or O and labeled the "preferred alternative".

[2] The column for the statewide no wilderness/no action alternative (Alt. 7) has been omitted, since all entries would be zero.

[3] Although the preferred alternative for this WSA includes a merger with a portion of WSA OR-5-1 under most statewide alternatives, application of the objectives for the commodity development emphasis alternative precludes such a merger.

wilderness areas, and in some cases these uses may detract from the areas' wilderness character.

The following summarizes general management guidelines which would be applied to all BLM areas designated as wilderness. A copy of the full policy may be obtained from any of the six district offices that manage wilderness study areas or from the BLM State Office in Portland.

General Policies

The general wilderness management policies include the following:

Naturalness: Natural ecosystems and ecological processes will be allowed to function naturally and with minimal human influence.

Solitude: Natural settings will be preserved and evidence of human activity will be minimized.

Special Features: Ecological, geological and historical features will be preserved unimpaired.

Visitor Use: Only the minimum facilities needed to protect the health and safety of visitors or to preserve wilderness values will be installed. When use of an area threatens to impair wilderness values, the use will be managed or limited to prevent such impairments.

Wilderness Management Plan: A management plan will be prepared for each designated wilderness area. It will apply national policies to the specific situation in the area.

Accepted Uses

Accepted uses in wilderness include:

- Camping, hiking, cross country skiing, backpacking, horsepacking, rockhounding.
- Nonmotorized boating.
- Hunting, fishing, noncommercial trapping.
- Scientific and educational studies of biological, geological, cultural, and historic features.

Table 2-2. Acres of Federal Land Recommended Suitable Under Each Alternative [1]

WSA No. (OR-)	WSA Name	Alt. 1 All Wld.	Alt. 2 Wld Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P. A.	Alt. 6 Com. Dvl.
1-2	Devils Garden Lava Bed	28,720	27,200	24,800	24,800	24,800	24,800
1-3	Squaw Ridge Lava Bed	27,700	20,890	20,890	20,890	20,890	20,890
1-22	Four Craters Lava Bed	11,960	8,660	5,090	8,660	8,660	8,660
1-24	Sand Dunes	16,000	16,000	0	16,000	0	0
1-58	Diablo Mountain	107,920	107,920	47,480	47,480	47,480	0
1-78	Orejana Canyon	24,600	14,800	14,800	14,800	14,800	14,800
1-101	Abert Rim	23,280	23,280	23,280	23,280	23,280	0
1-117	Fish Creek Rim	16,070	15,740	11,300	11,300	11,300	
1-132	Guano Creek	10,350	9,890	9,890	9,890	9,890	9,890
1-139	Spaulding	69,530	34,800	34,800	0	0	0
1-146	Hawk Mountain	68,360	68,360	41,000	68,360	68,360	68,360
2-14	Malheur R.-Bluebucket Cr.	5,560	5,560	5,560	5,560	5,560	5,560
2-23L	Stonehouse	21,000	19,990	19,990	0	0	0
2-23M	Lower Stonehouse	8,090	7,125	7,125	0	0	0
2-72C	Sheepshead Mtns.	51,120	43,160	43,160	43,160	43,160	0
2-72D	Wildcat Canyon	32,720	32,720	32,720	32,720	32,720	0
2-72F	Heath Lake	20,100	20,100	0	0	0	0
2-72I	Table Mountain	38,600	53,800[2]	24,500	24,500	24,500	0
2-72J	West Peak	7,900	7,900	0	0	0	0
2-73A	East Alvord	21,600	21,600	15,145	15,145	15,145	0
2-73H	Winter Range	14,800	0	0	0	0	0
2-74	Alvord Desert	111,690	93,620	64,410	64,410	64,410	0
2-77	Mahogany Ridge	27,210	28,020	0	0	0	0
2-78	Red Mountain	14,730	15,170	0	0	0	0
2-81	Pueblo Mountains [3]	69,310	70,015	38,875	38,875	38,875	0
2-82	Rincon	97,545	97,545	19,000	19,000	19,000	19,000
2-83	Alvord Peak	14,655	14,655	0	0	0	0
2-84	Basque Hills	137,220	137,220	0	0	0	0
2-85F	High Steens	65,420	53,760	34,940	34,940	34,940	0
2-85G	S.Fk. Donner & Blitzen R.	35,850	35,850	0	0	0	0
2-85H	Home Creek	25,120	21,000	21,000	21,000	21,000	21,000
2-86E	Blitzen River	51,890	52,090	7,770	20,170	20,170	20,170
2-86F	Little Blitzen Gorge	9,240	9,410	6,270	6,270	6,270	0
2-87	Bridge Creek	14,060	0	0	0	0	0
2-103	Aldrich Mountain	9,395	9,395	0	9,395	0	0
3-18	Castle Rock	5,560	5,335	0	0	0	0
3-27	Beaver Dam Creek	19,140	0	0	0	0	0
3-31	Camp Creek	18,360	18,520	15,400	15,400	15,400	0
3-32	Cottonwood Creek	8,500	8,540	7,700	7,700	7,700	0
3-33	Gold Creek	12,920	12,920	0	0	0	0
3-35	Sperry Creek	5,360	5,360	0	0	0	0
3-47	Cedar Mountain	31,440	31,440	0	31,440	0	0
3-53	Dry Creek	22,540	22,540	0	0	0	0
3-56	Dry Creek Buttes	49,880	0	0	0	0	0
3-59	Owyhee Breaks	13,100	13,100	0	0	0	0
3-73	Blue Canyon	12,700	0	0	0	0	0
3-75	Slocum Creek	7,600	0	0	0	0	0
3-77A	Honeycombs	39,000	36,300	36,300	36,300	36,300	0
3-77B	Wild Horse Basin	12,100	0	0	0	0	0
3-110	Lower Owyhee Canyon	71,940	71,940	46,660	46,660	46,660	0
3-111	Saddle Butte	81,300	58,080	58,080	0	0	0
3-114	Palomino Hills	50,560	50,560	0	0	0	0
3-118	Bowden Hills	56,140	42,100	42,100	0	0	0
3-120	Clarks Butte	31,450	18,250	18,250	0	0	0
3-128	Jordan Craters	27,560	27,560	22,200	22,200	22,200	22,200
3-152	Willow Creek	28,810	12,810	12,810	12,810	12,810	0
3-153	Disaster Peak [4]	30,490	28,890	28,890	28,890	28,890	0
3-156	Fifteenmile Creek	48,460	48,460	48,460	48,460	48,460	0
3-157	Oregon Canyon	40,400	12,660	12,660	12,660	12,660	0
3-162	Twelvemile Creek	26,960	25,140	25,140	25,140	25,140	0

Table 2-2. Acres of Federal Land Recommended Suitable Under Each Alternative [1] (continued)

WSA No. (OR-)	WSA Name	Alt. 1 All Wld.	Alt. 2 Wld Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P. A.	Alt. 6 Com. Dvl.
3-173	Upper W. Ltl. Owyhee	58,660	58,660	58,660	58,660	58,660	58,660
5-1	Thirtymile	7,538	7,332	5,686	7,332	7,332	0
5-6	Lower John Day	19,352	15,470	12,767	15,470	15,470	15,470
5-8	North Pole Ridge	6,249	5,710	5,212	5,710	5,710	0
5-9	Spring Basin	5,982	5,299	5,299	5,982	0	0
5-21	Badlands	32,221	20,727	20,727	20,727	20,727	20,727
5-31	North Fork	10,745	10,745	0	10,745	0	0
5-33	South Fork	19,391	16,761	16,761	16,761	16,761	0
5-34	Sand Hollow	8,091	7,751	7,751	7,751	7,751	0
5-35	Gerry Mountain	19,980	15,830	15,830	0	0	0
5-42	Hampton Butte	10,600	10,600	0	0	0	0
5-43	Cougar Well	17,315	17,315	0	0	0	0
6-2	Homestead	13,975[5]	8,455[6]	8,455[6]	13,975[5]	0	0
6-3	Sheep Mountain	7,040	6,140	6,140	6,140	6,140	6,140
11-17	Soda Mountain	5,410	5,410	0	5,410	0	0
12-8	N. Sisters Rocks	3	3	3	3	3	3
12-14	Zwagg Island	5	5	5	5	5	5
	Total Acres	2,304,142	1,959,963	1,111,741	1,042,936	949,989	336,335
Percent of Total WSA Acres		100	85	48	45	41	15

[1] The column for the no wilderness/no action alternative has been omitted, since all entries would be zero.

[2] For tabular purposes, the public lands outside the WSAs of the Sheepshead Mountains group that are included in the suitable recommendation under the wilderness emphasis alternative are added to the Table Mountain WSA only.

[3] Suitable acreages include Nevada's Pueblo Mountain WSA (NV-020-642) totaling 600 acres.

[4] Suitable acreages include Nevada's Disaster Peak WSA (NV-020-859) totaling 13,200 acres under alternative 1 and 12,300 acres under alternatives 2, 3, 4 and 5.

[5] Includes 7,654 acres of the adjacent jointly studied national forest land (Homestead Further Planning Area).

[6] Includes 6,200 acres of the adjacent Homestead Further Planning Area.

Nonconforming but Accepted Uses

Examples of other uses allowed by law in wilderness areas are:

Mining and Mineral Leasing

- Wilderness areas are withdrawn from location of new mining claims and the issuance of mineral leases upon designation.

Mining Claims

- After an area is designated as wilderness, miners may explore, develop, and obtain title to claims which existed as valid claims before the area was designated.

- New claims cannot be established after the area is withdrawn from the mining laws through wilderness designation.

- Except for casual uses resulting in negligible disturbances of wilderness values, a miner will be required to submit a plan of operations and receive approval from BLM. In approving the operating plan, BLM must ensure that the miner's rights are protected and impacts on wilderness values are minimized.

Mineral Leasing

- No new leases will be issued. Leases existing at the time of designation will be managed to protect wilderness values to the extent possible, but lessees will be allowed to exercise the rights conferred when they obtained the leases.

Livestock Grazing

- Livestock grazing, where established prior to wilderness designation, will be allowed to continue. Grazing will not be curtailed simply because an area is designated wilderness. Any adjustments in the number of livestock allowed in a wilderness area will be made through BLM's normal grazing and land management planning and policy-setting processes. Due consideration will be given to legal mandates, range condition, and the need to prevent range deterioration. Where rangeland conditions permit increases in grazing use, such increases will be limited to levels that do not diminish the wilderness values of the area.

- Facilities used in livestock operations, such as fences, line cabins, and stock tanks, may be maintained and replaced. New livestock grazing facilities may be constructed if they are needed to protect the rangeland and/or wilderness resource, rather than to accommodate increased numbers of livestock.

- Motorized equipment may be used occasionally to maintain livestock facilities or manage livestock if there are no practical alternatives.

Management of Wild Horses

- Viable, healthy populations of wild horses will be maintained in wilderness areas which contain wild horse herd management areas designated under the provisions of the Wild Free-Roaming Horse and Burro Act of 1971. Herd numbers and management techniques will not substantially degrade, and will be compatible with preservation of, the areas' wilderness character.

- Use of motorized and mechanical equipment and use of equipment such as temporary corrals will be allowed when no alternatives exist, they are the minimum necessary to accomplish the task, and they are the least degrading of wilderness values.

Fire, Insect, and Disease Management

- Fires will be controlled to prevent loss of human life or property within wilderness areas or to prevent the spread of fires to areas outside of wilderness where life, resources, or property may be threatened. Human-caused wildfires will be prevented and/or controlled unless they meet wilderness fire management objectives.

- To return some wilderness ecosystems to a more natural state, it may be appropriate to allow natural fires to burn, but only in conformance with an approved fire management plan and the overriding guidance in the preceding paragraph.

- Prescribed burning may be allowed to meet specific objectives listed in the wilderness management policy.

- Insect and disease outbreaks will be artificially controlled only if necessary to protect timber or other valuable resources outside a wilderness, or in special instances when losses within a wilderness (for example, a threatened or endangered species) are undesireable.

Water Resource Developments

- Water resource facilities which existed before the area was designated wilderness may be used and maintained if such use is in the public interest or is a valid existing right.

Access to Non-Federal Lands

- States or persons, and their successors in interest, who own land completely surrounded by a wilderness area shall be given such rights as may be necessary to assure adequate access to their land. "Adequate access" is the combination of routes and modes of travel which will, as determined by BLM, cause the least lasting impact on wilderness values and at the same time serve the reasonable purpose for which the state or private land is held.

Gathering Information About Resources

- Activities whose purposes are to gather information about natural resources will be permitted if they would not impair wilderness values.

- Motorized equipment and vehicles may be used for such activities only with BLM approval. BLM will grant such authorization only if wilderness values would not be degraded.

Prohibition of Certain Uses

- Except where subject to existing private rights, where necessary to administer the wilderness area according to the purposes of the Wilderness Act, or as specifically provided for elsewhere in the management policy, there will be no permanent or temporary roads; no use of motor vehicles, motorized equipment, or motor boats; no landing of aircraft; no other form of mechanical transport; no structure or installation; and no commercial enterprise within wilderness areas.

Buffer Zones Prohibited

- No buffer zones will be created around wilderness areas to protect them from the influence of activities on adjacent land.

Motorized and Mechanical Equipment

- Travel in a wilderness area normally will be by nonmotorized, non-mechanical means consistent with the preservation of wilderness values.

- The management plan for a wilderness area will specify the instances and places in which administrative use of mechanized equipment, mechanical transport, or aircraft is necessary to protect and administer the wilderness area; or is necessary to accomplish a nonconforming, but accepted, use.

- Where approved, the selected equipment will be the minimum necessary to accomplish the task with the least lasting and damaging impact on wilderness values.

- Motorized and mechanical equipment use will be scheduled at times and locations which will have the least impact on the visitors' wilderness experience.

- Examples of some of the conditions under which motorized and mechanical equipment may be allowed are:

1. Public use of aircraft or motorboats, where such uses were established before the area was designated wilderness.

2. For mining or prospecting purposes if approved in a plan of operations or related to valid existing rights.

3. In some situations involving livestock grazing operations.

4. In emergency conditions involving the health and safety of visitors.

5. During a fire suppression emergency.

Other possible uses of motorized and mechanical equipment are listed in the management policy.

Special Management Provisions

- In legislation designating specific wilderness areas, Congress may establish management rules which override those in the Wilderness Act or BLM's wilderness management policy.

Other Management Policies

- The wilderness management policy booklet contains guidelines on other topics not included in this summary, such as recreation and visitor use, cultural and historical resources, forest resources, fish and wildlife, water resource management, and others.

Summary of Proposed Management Under Each Alternative

Table 2-3 summarizes the management programs proposed, on a statewide basis, for the study areas under each alternative. Specific alternative management programs for each WSA are described in the individual appendices. Following are some general explanations for several items included in the table.

Acres Designated as Wilderness: These entries represent the total acres recommended suitable for wilderness designation under each alternative. The acreages include lands administered by the U.S. Forest Service in the all wilderness, wilderness emphasis, conflict resolution emphasis, and ecosystem diversity emphasis alternatives as a result of a USFS/BLM joint wilderness study involving lands adjoining the Homestead WSA (OR-6-2). In all alternatives but the all wilderness, commodity development emphasis, and no wilderness/no action alternatives, the entries also include small acreages of public land adjacent to WSAs which were recommended as suitable for wilderness in a few cases to enhance manageability of the adjacent area as wilderness.

Acres Closed to ORVs by Wilderness Designation: The acreages may be lower than the total acres designated wilderness under each alternative, since ORV closures already exist in portions of several WSAs.

Table 2-3. Summary of Proposed Management Under Each Alternative

Proposed Management	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.	Alt. 7 No Wld.
Acres Designated as Wilderness	2,304,142	1,959,963	1,111,741	1,042,936	949,989	336,335	0
Acres Closed to ORVs by Wilderness Designation	2,261,902	1,942,443	1,090,451	1,024,006	935,199	334,335	0
Miles of Roads Closed	0	340.7	136.9	146.6	146.6	10.5	0
Miles of Ways Closed	1,011.0	851.5	405.1	415.7	366.0	103.7	0
Acres of Full Fee Estate Acquired	0	38,545	9,250	8,955	8,955	1,080	0
Acres of Split Estate Acquired	0	76,570	43,665	35,865	35,865	8,500	0
Acres Withdrawn from Mineral Location & Leasing by Wilderness Designation	2,286,178	1,951,153	1,088,316	1,027,357	940,944	336,335	0
Structural Wildlife Projects Developed:							
Catchments & Guzzlers (number)	0-51	5-51	14-51	29-51	29-51	37-51	51
Fences (miles)	0-22.7	4.6-22.7	6.6-22.7	6.6-22.7	6.6-22.7	16.6-22.7	22.7
Stream Channel, Wetlands & Fish Stocking Projects (number)	0-8	0-8	4-10	2-10	4-10	10	10
Nest Structures	0-114	0-114	14-114	0-114	14-114	49-114	114
Vegetative Manipulation for Wildlife:							
Brush Control Without Seeding (acres)	0	6,450	6,450	20,360	20,360	22,880	22,880
Seeding & Brush Control with Seeding (acres)	0	660	1,860	2,700	2,700	3,620	5,065
Structural Livestock Projects Developed:							
Reservoirs & Waterholes (number)	0-95	10-96	54-94	51-95	57-96	85-96	96
Springs (number)	1-38	8-38	28-38	24-38	26-38	36-38	38
Wells (number)	0-4	0-4	4	4	4	5	5
Pipelines (miles)	0-89.5	2-89.5	87.5-98.5	87.5-98.5	87.5-98.5	93.5-104.5	104.5
Fences (miles)	0-113.4	3-113.4	89-120.4	94-120.4	98-120.4	127.4-128.4	128.4
Storage Tanks (number)	0-4	0-4	4-5	4-5	4-5	5-6	6
Vegetative Manipulation for Livestock:							
Brush Control Without Seeding (acres)	0	1,920	11,360	11,770	11,770	28,820	29,780
Brush Control with Seeding (acres)	0	1,525	34,885	35,887	36,167	39,067	40,732
Juniper Control w/o Seeding (acres)	0	1,911	1,911	1,911	1,911	2,711	2,711
Unallocated Existing Forage Allocated (AUMS)	0-35,121	80-35,121	2,515-35,121	6,111-35,121	6,111-35,121	28,965-35,121	35,121
Acres of Timber Available for Harvest	0	330	1,752	0	1,752	1,752	1,774
Average Annual Volume of Timber Sold (Mbf-Thousand Board Feet)	0	33	264	0	264	264	265.5
Acres of Suitable Minor Forest Products Available for Harvest	0	7,040	9,080	8,160	8,160	8,760	9,680
Restrictions on Potential Utility Corridors (miles added)	13.7	4.4	0	0	0	0	0

Miles of Roads Closed: Some primitive BLM roads separating adjacent study areas would be closed and the study areas--or portions of study areas--would be merged into a larger wilderness area. (None of the boundary roads provides the sole access to private land or is essential to the general use and management of public lands. However, if there were no practical alternative to the use of a motorized vehicle to manage livestock or maintain livestock grazing facilities, a grazing permittee may be allowed to use a vehicle on a closed route under terms specified in his grazing permit.) In addition, some of the primitive, dead-end roads extending into study areas recommended as suitable for wilderness would be closed.

No mergers of study areas are included in the all and no wilderness/no action alternatives; in the remaining alternatives, the number of recommended mergers decreases from the wilderness emphasis alternative to the commodity development emphasis alternative. In the wilderness emphasis alternative, eight wilderness areas would be formed from portions of 24 study areas. In the commodity development emphasis alternative, one wilderness area would be formed from portions of three study areas.

Acres of Full Fee Estate Acquired and Acres of Split Estate Acquired: All of the alternatives except the all wilderness and no wilderness/no action alternatives include recommendations to acquire inholdings and some adjacent lands and to include these lands in areas recommended as suitable for wilderness. These lands could be acquired through purchase or exchange with willing owners. The inholdings and adjacent lands include parcels in which the surface, but not the minerals, are federally owned (split estate) and parcels in which neither the surface nor the minerals are federally owned (full fee estate). Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing. Therefore, the acquired acreages could be added to the entries for these line items.

Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation: The acreages may be lower than the total acres designated wilderness under each alternative, since mineral withdrawals already exist in portions of a few WSAs.

Structural Wildlife and Livestock Projects Developed: Most of the proposed structural projects might or might not be allowed under wilderness management, depending upon a determination of whether wilderness values would be impaired. The entries for all alternatives with suitable recommendations, therefore, show a range of projects developed, with the minimum representing projects outside and unaffected by the suitable area and the maximum representing the total projects proposed.

Vegetative Manipulation for Wildlife and for Livestock: In one type of project, sagebrush is removed with fire or other means. If the brush-free areas have sufficient stands of native grasses to serve as seed sources, the areas are managed to increase the native grasses (brush control without seeding). Where there are not sufficient stands of native grasses, crested wheatgrass, a nonnative species, is seeded (brush control with seeding).

Another type of vegetative manipulation project involves cutting or burning juniper trees to make more ground moisture and light available to grasses, forbs and shrubs. When the trees are cut, they are left on the ground to provide habitat for small animals, return nutrients to the soil, and reduce overland water runoff, or they are made available to firewood gatherers. If there is enough native grass to serve as a seed source, as is the case in the one WSA (Badlands, OR-5-21) where juniper cutting is proposed, the cleared site will be managed to increase the native grass (juniper control without seeding).

Unallocated Existing Forage Allocated: In some WSAs, more forage is currently produced than has been allocated to livestock or for any other purpose. This forage could be made available to livestock without the development of any new livestock management facilities. The allocation of this existing forage might or might not be allowed under wilderness management depending upon a determination of whether wilderness values would be impaired. The entries for all alternatives with suitable recommendations, therefore, show a range of AUMs allocated, with the minimum representing allocations outside and unaffected by the suitable area and the maximum representing the total allocation.

Effects of the Alternatives

Table 2-4 presents a comparison of impacts of the proposed action and other alternatives.

Interrelationships with other BLM Studies; Local, State and Federal Agencies; and Utility Corridor Studies

Other BLM Studies and Plans

Three BLM wilderness study areas in Oregon are not analyzed in this EIS. One, the Owyhee River Canyon WSA (OR-3-195) is addressed in detail in the Owyhee Canyonlands Wilderness EIS, the draft of which was issued by BLM's Boise District Office in March 1984. That EIS addresses the impacts of wilderness designation for eight WSAs along the Owyhee River where the states of Oregon, Idaho and Nevada join. Of the 436,047 acres in the eight WSAs, 214,380 acres are in the Owyhee River Canyon WSA; 180,680 acres are in Oregon. The draft EIS analyzes five alternatives, with the preferred alternative recommending 374,160 acres as suitable for wilderness, including 172,095 acres in the Owyhee River Canyon WSA (138,395 in Oregon).

The Steelhead Falls WSA (OR-5-14) will be addressed in a Forest Service EIS (See "Adjacent Forest Service Areas" in this chapter). The third WSA, McGraw Creek (OR-6-1), was reduced in size from 1,465 acres to 427 acres through passage of the Oregon Wilderness Act of 1984, which designated the other 1,038 acres as wilderness along with adjacent Forest Service land. The status of the remaining 426 acres will be considered separately from this EIS.

Table 2-4. Comparison of Impacts

Impact Topics	Alt. 1 All Wilderness	Alt. 2 Wilderness Emphasis	Alt. 3 Conflict Resolution Emphasis	Alt 4. Ecosystem Diversity	Alt. 5 Proposed Action	Alt. 6 Commodity Development Emphasis	Alt. 7 No Wilderness/ No Action
Effects on Wilderness Values	Wilderness values on 2,304,142 acres preserved or enhanced by wilderness designation. Would add to National Wilderness Preservation System (NWPS) two ecosystems (Bailey-Küchler) not currently represented in system.	Wilderness values on 1,959,963 acres preserved or enhanced. Development on 344,179 acres not designated wilderness would significantly reduce wilderness values over the long term. Increased motorized recreation use of the lands not designated would reduce opportunities for solitude and primitive recreation. Would add two ecosystems not currently represented in the NWPS.	Wilderness values on 1,111,741 acres preserved or enhanced. Development on 1,192,401 acres not designated wilderness would significantly reduce wilderness values over the long term. Increased motorized recreation use of the lands not designated would reduce opportunities for solitude and primitive recreation. Would add two ecosystems not currently represented in the NWPS.	Wilderness values on 1,042,936 acres preserved or enhanced. Development on 1,261,206 acres not designated wilderness would significantly reduce wilderness values over the long term. Increased motorized recreation use of the lands not designated would reduce opportunities for solitude and primitive recreation. Would add two ecosystems not currently represented in the NWPS.	Wilderness values on 949,989 acres preserved or enhanced. Development on 1,354,153 acres not designated wilderness would significantly reduce wilderness values over the long term. Increased motorized recreation use of the lands not designated would reduce opportunities for solitude and primitive recreation. Would add two ecosystems not currently represented in the NWPS.	Wilderness values on 336,335 acres preserved or enhanced. Development on 1,967,807 acres not designated wilderness would significantly reduce wilderness values over the long term. Increased motorized recreation use of the lands not designated would reduce opportunities for solitude and primitive recreation. Would add one ecosystem not currently represented in the NWPS.	Wilderness values on 2,304,142 acres would be significantly reduced by developments over the long term. Increased motorized recreation use of the lands would further reduce opportunities for solitude and primitive recreation.
Effects on Energy and Mineral Development	2,286,000 acres, except for valid existing rights, would be withdrawn from future development. Substantial acreages with high and moderate potential for occurrence of metals and energy resources withdrawn, as well as substantial acreage with moderate potential for occurrence of some non-metals.	1,951,000 acres, except for valid existing rights, withdrawn from exploration and development. Less than all wilderness but still substantial acreages withdrawn with high and moderate potential for metals and energy resources occurrence and moderate potential for occurrence of some non-metals.	1,088,000 acres, except for valid existing rights, withdrawn. Much less than wilderness emphasis, but still substantial acreages withdrawn with high and moderate potential for metals and energy resources occurrence and moderate potential for occurrence of some non-metals.	1,027,000 acres, except for valid existing rights, withdrawn. Similar acreage to conflict resolution alternative withdrawn with high and moderate potential for metals and energy resouces occurrence and moderate potential for occurrence of some non-metals.	941,000 acres, except for valid existing rights, withdrawn. Similar acreage to conflict resolution alternative withdrawn with high and moderate potential for metals and energy resources occurrence and moderate potential for occurrence of some non-metals.	336,000 acres, except for valid existing rights, withdrawn. Negligible acreages withdrawn with high potential for minerals and energy resources occurrence. Much less than the preferred alternative but still substantial acreage withdrawn with moderate potential for occurrence of metals, energy resources and some non-metals.	Mineral exploration and development could continue on all lands in the WSAs subject to limited constraints established in existing land-use plans.
Effects on Vegetation	Vegetation in all WSAs would change only through natural ecological succession or as a result of fire.	12,466 acres of vegetation would change as a result of brush control, juniper control, prescribed burning and seeding (vegetative manipulation). Possible disturbance to federal candidate species from mining in undesignated areas and to other plants of special interest from activities in undesignated areas unless plants are designated BLM sensitive.	56,466 acres of vegetation would change as a result of vegetative manipulation. Possible disturbance to federal candidate species from mining in undesignated areas and to other plants of special interest from activities in undesignated areas.	71,216 acres of vegetation would change as a result of vegetative manipulation. Possible disturbance to federal candidate species from mining in undesignated areas and to other plants of special interest from activities in undesignated areas.	72,498 acres of vegetation would change as a result of vegetative manipulation. Possible disturbance to federal candidate species from mining in undesignated areas and to other plants of special interest from activities in undesignated areas.	93,138 acres of vegetation would change as a result of vegetative manipulation. Possible disturbance to federal candidate species from mining in undesignated areas and to other plants of special interest from activities in undesignated areas.	97,208 acres of vegetation would change as a result of vegetative manipulation. Possible disturbance to federal candidate species from mining and to other plants of special interest from activities in the area.

Table 2-4. Comparison of Impacts (continued)

Impact Topics	Alt. 1 All Wilderness	Alt. 2 Wilderness Emphasis	Alt. 3 Conflict Resolution Emphasis	Alt 4. Ecosystem Diversity	Alt. 5 Proposed Action	Alt. 6 Commodity Development Emphasis	Alt. 7 No Wilderness/ No Action
Effects on Wildlife	Wildlife habitat preserved. Some opportunities to expand wildlife populations foregone due to restrictions on improvements.	Timber harvest in one WSA would adversely affect local wildlife populations. Rangeland vegetation manipulations would benefit antelope populations but reduce habitat diversity. More wildlife population expansion projects developed than under all wilderness alternative.	Timber harvest in three WSAs would adversely affect local wildlife populations. Rangeland vegetation manipulations benefiting antelope populations but reducing habitat diversity more extensive than in wilderness emphasis alternative. More wildlife population expansion projects developed than under wilderness emphasis alternative.	Impacts of rangeland vegetation manipulations similar to conflict resolution alternative. Number of wildlife habitat expansion projects developed similar to conflict resolution alternative.	Timber harvest would adversely affect wildlife in three WSAs. Impacts of rangeland vegetation manipulations greater than conflict resolution or ecosystem diversity alternative. More wildlife habitat expansion projects developed than conflict resolution and ecosystem diversity alternatives.	Timber harvest would adversely affect wildlife in three WSAs. Impacts of rangeland vegetation manipulations greater than proposed action. More wildlife habitat expansion projects developed than proposed action.	Timber harvest would adversely affect wildlife in four WSAs. Greatest impacts from rangeland manipulations. All proposed wildlife habitat expansion projects in WSAs could be developed.
Effects on Livestock Grazing	Due to constraints on development of range improvements and possible constraints on the utilization of unallocated surplus forage, use of as much as 67,000 AUMs of potential forage could be foregone. Current levels of livestock use unaffected.	Use of as much as 63,000 AUMs of potential forage could be foregone. Current levels of livestock use unaffected.	Use of as much as 42,000 AUMs of potential forage could be foregone. Current levels of livestock use unaffected.	Use of as much as 38,000 AUMs of potential forage could be foregone. Current levels of livestock use unaffected.	Use of as much as 37,000 AUMs of potential forage could be foregone. Current levels of livestock use unaffected.	Use of as much as 8,500 AUMs of potential forage could be foregone. Current levels of livestock use unaffected.	Current levels of livestock use unaffected. All proposed increases in use and proposed range developments expected to occur.
Effects on Utility Corridor Routing	Rerouting of potential corridors would add over 13 miles to proposed routes.	Rerouting of potential corridors would add over 4 miles to proposed routes.	No substantial shifts in potential utility corridor routes required.	No substantial shifts in potential utility corridor routes required.	No substantial shifts in potential utility corridor routes required.	No substantial shifts in potential utility corridor routes required.	No substantial shifts in potential utility corridor routes required.
Effects on Wood Products Harvest	Annual timber yield of 276 thousand board feet foregone.	Annual timber yield of 243 thousand board feet foregone.	Annual timber yield of 1 thousand board feet foregone.	Annual timber yield of 276 thousand board feet foregone.	Annual timber yield of 1 thousand board feet foregone.	Annual timber yield of 1 thousand board feet foregone.	Annual timber yield unaffected.
Effects on Recreation Use	Decrease in recreation use in 24 WSAs and increase in 10 WSAs expected, compared to current projections of use. No change in net use levels expected in the remaining WSAs. Vehicle use eliminated from WSAs, and primitive recreation experience enhanced with some increase in primitive use in a few WSAs.	Decrease in recreation use in 28 WSAs and increase in 9 WSAs, compared to current projections of use. Vehicle use eliminated and primitive recreation experience enhanced in designated areas. Primitive recreation experience degraded in many areas not designated.	Decrease in recreation use in 11 WSAs and increase in 16 WSAs, compared to current projections of use. Vehicle use eliminated and primitive recreation experience enhanced in designated areas. Primitive recreation experience degraded in many areas not designated.	Decrease in recreation use in 10 WSAs and increase in 17 WSAs, compared to current projections of use. Vehicle use eliminated and primitive recreation experience enhanced in designated areas. Primitive recreation experience degraded in many areas not designated.	Decrease in recreation use in 8 WSAs and increase in 18 WSAs, compared to current projections of use. Vehicle use eliminated and primitive recreation experience enhanced in designated areas. Primitive recreation experience degraded in many areas not designated.	Decrease in recreation use in 2 WSAs and increase in 14 WSAs, compared to current projections of use. Vehicle use eliminated and primitive recreation experience enhanced in designated areas. Primitive recreation experience degraded in many areas not designated.	Decrease in recreation use in 2 WSAs and increase in 8 WSAs, compared to current projections of use that assume projects proposed in current land use plans are not implemented. Primitive recreation experience degraded in many areas.

Table 2-4. Comparison of Impacts (continued)

Impact Topics	Alt. 1 All Wilderness	Alt. 2 Wilderness Emphasis	Alt. 3 Conflict Resolution Emphasis	Alt 4. Ecosystem Diversity	Alt. 5 Proposed Action	Alt. 6 Commodity Development Emphasis	Alt. 7 No Wilderness/ No Action
Effects on Economic Value and Local Income	Decreases in annual economic value could be as little as 10,000 or as much as 491,000 depending on what proposed projects and grazing increases would be allowed in wilderness. Changes in local personal income would range from a decrease of $187,000 to an increase of $608,000, depending on the same uncertain factors. Both sets of futures exclude unknown economic effects of mineral development and unquantified changes in recreation use.	Changes in annual economic value could range from a decrease of as much as $385,000 to an increase of as much as $83,000 depending on what proposed projects and grazing increases would be allowed in wilderness. Changes in local personal income would range from a decrease of $101,000 to an increase of $663,000, depending on the same uncertain factors. Both sets of figures exclude unknown economic effects of mineral development and of unquantified changes in recreation use.	Changes in annual economic value could range from a decrease of as much as $124,000 to an increase of as much as $273,000 depending on what proposed projects and grazing increases would be allowed in wilderness. Increases in local personal income would range from $234,000 to $827,000, depending on the same uncertain factors. Both sets of figures exclude unknown economic effects of mineral development and unquantified changes in recreation use.	Changes in annual economic value could range from a decrease of as much as $164,000 to an increase of as much as $213,000 depending on what proposed projects and grazing increases would be allowed in wilderness. Increases in local personal income would range from $242,000 to $791,000 depending on the same uncertain factors. Both sets of figures exclude unknown economic effects of mineral development and of unquantified changes in recreation use.	Changes in annual economic value could range from a decrease of as much as $68,000 to an increase of as much as $300,000 depending on what proposed projects and grazing increases would be allowed in wilderness. Increases in local personal income would range from $310,000 to $850,000, depending on the same uncertain factors. Both sets of figures exclude unknown economic effects of mineral development and of unquantified changes in recreation use.	Increases in annual economic value could range from $315,000 to $476,000 depending on what proposed projects and grazing increases would be allowed in wilderness. Increases in local personal income would range from $743,000 to $928,000, depending on the same uncertain factors. Both sets of figures exclude unknown economic effects of mineral development and unquantified changes in recreation use.	Increases in annual economic value would be $504,000. Local personal income would increase by $941,000. Both sets of figures exclude unknown economic effects of mineral development.

Congress required in the Federal Land Policy and Management Act that the wilderness review of certain primitive and research natural areas be carried out on an accelerated basis. Five of these areas, called instant study areas, are located in Oregon. Four of these areas have been recommended (by the Secretary of the Interior to the President) for nondesignation as wilderness, as they do not have wilderness characteristics. Portions of the Lost Forest Instant Study Area (ISA) are contained in the Sand Dunes WSA (OR-1-24). The State Director's report to the BLM Director on the Lost Forest ISA concluded that the ISA by itself lacked wilderness characteristics, and therefore should not be recommended for wilderness designation. However, it also concluded that the portion of the ISA within the Sand Dunes WSA should be studied as part of the Sand Dunes WSA.

A number of WSAs embrace all or part of designated Areas of Critical Environmental Concern and/or Research Natural Areas. The management constraints for these areas would generally remain the same whether or not the lands were also designated wilderness, with the primary exception that, if designated wilderness, they would be withdrawn from location of mining claims.

All of Little Blitzen Gorge WSA (OR-2-86F) and substantial portions of Blitzen River (OR-2-86E), High Steens (OR-2-85F), South Fork of the Donner und Blitzen River (OR-2-85G) and Bridge Creek (OR-2-87) WSAs lie within an area designated in 1971 as the Steens Mountain Recreation Lands. This designation earmarks the area for special multiple use management while maintaining its natural condition to protect recreational values. Private and state lands, as well as those managed by BLM, are included in the designated area.

Adjacent Forest Service Areas

Two national forest roadless areas designated as further planning areas lie adjacent to BLM WSAs, separated only by administrative boundaries. Through cooperative agreements between BLM and the U.S. Forest Service, these adjoining areas are being jointly studied with one agency designated as lead. The suitability of jointly studied lands is addressed in the designated lead agency's Plan/EIS with review and input provided by the cooperating agency.

BLM's Steelhead Falls WSA (OR-5-14), containing 3,114 acres, lies adjacent to the 9,955-acre Deschutes Canyon Further Planning Area in the Crooked River National Grassland, managed by the Ochoco National Forest. The suitability of the Steelhead Falls WSA will be addressed in the Forest Service's Ochoco Forest Plan/EIS, a draft of which is scheduled for issuance in 1985.

BLM's Homestead WSA (OR-6-2), containing 6,321 acres, adjoins 7,654 roadless acres in the Wallowa-Whitman National Forest which were designated for further planning in the Hells Canyon National Recreation Area Comprehensive Management Plan. All 13,975 acres are analyzed and addressed in this EIS. The Forest Service is the cooperating agency in this EIS with respect only to this joint wilderness study area.

Other BLM wilderness study areas (i.e., Devils Garden (OR-1-2), Aldrich Mountain (OR-2-103), and North Fork (OR-5-31)) adjoin national forest roadless areas which were released by the Oregon Wilderness Act of 1984. These adjoining areas were released from further review of wilderness values until the national forest plan revisions, expected to take place in the 1990s.

Wild and Scenic Rivers

In 1984 an Act of Congress was passed designating two segments of the Owyhee River in Oregon as components of the National Wild and Scenic Rivers System, to be administered as a wild river by the Secretary of the Interior. The upper segment is almost entirely within the Owyhee River Canyon WSA (OR-3-195), which is addressed in the Owyhee Canyonlands Wilderness EIS. Most of the lower seqment, 50 miles from Crooked Creek to the Owyhee Reservoir, is straddled by the Owyhee Breaks (OR-3-59) and Lower Owyhee Canyon (OR-3-110) WSAs. Its designation as a federal wild river has withdrawn from disposal, mineral leasing, and location of mining claims all public lands within 1/4 mile on each side of the river. The legislative record also states explicitly that livestock grazing may be allowed to continue within the boundary of the wild and scenic river corridor.

The upper 45 miles of this same segment of the river is also a designated Oregon State Scenic Waterway. The state designation provides some state control over private land use changes within 1/4 mile of the stream, which affects the private lands inside the WSAs.

The John Day River from Service Creek to Tumwater Falls (147 miles) is also an Oregon State Scenic Waterway. The Spring Basin WSA (OR-5-9) abuts this section of the river on the east, and the Thirtymile (OR-5-1), Lower John Day (OR-5-6) and North Pole Ridge (OR-5-8) study areas straddle it. A National Park Service "John Day River Wild and Scenic River Study" was completed in September 1979. This study recommends the addition of the state scenic stretch of the river to the national wild and scenic rivers system as a "scenic" river. No subsequent action has been taken on this recommendation.

The North Fork Crooked River, straddled by North Fork WSA (OR-5-31), is included in the National Park Service's Nationwide Rivers Inventory being conducted under the Wild and Scenic Rivers Act.

Water Power and Water Storage Potential

Twelve of the wilderness study areas are affected by federal designations for waterpower and water storage potential on streams and rivers. The designations are based on the Act of March 3, 1879, which created the U.S. Geological Survey, and the Pickett Act of June 25, 1910. From these two acts evolved power site classifications and power site reserves, both of which are intended to protect the potential for waterpower and water storage development on federal lands. Lands may also be designated by applications filed with the Federal Energy Regulatory Commission (FERC) for power development under the Federal Power Act, commonly referred to as "FERC withdrawals."

Table 2-5 summarizes the WSAs affected and the designations and approximate acreage withdrawn.

Most of the designations affecting the WSAs will likely be recommended for revocation at the time the withdrawals are reviewed by BLM or FERC. All of the power site reserves and classifications will be reviewed by the BLM Oregon State Office waterpower staff by 1991. The FERC withdrawals are also scheduled for review within the next few years and will be revoked where appropriate.

Most of the designated waterpower and water storage sites in WSAs lie along the federally designated wild river segment of the Owyhee River

Table 2-5. Wilderness Study Areas With Designations for Waterpower Potential

WSA No. (OR-)	Approximate Acreage Designated in WSA	Designation [1]
2-14	1,760	PSR No. 708
2-86E	2,520	PSR Nos. 61 & 220
3-33	200	PSR Nos. 175 & 260
3-47 and 3-59	1,760	PSR No. 3
3-110	6,040	PSR No. 3
5-1	2,800	PSR Nos. 24, 145 & 566
5-6	8,520	PSR Nos. 24, 145 & 566
5-8	1,840	PSR Nos. 24, 145 & 566
5-9	400	PSR No. 24 & PSC No. 383
6-2	300	PSR No. 77, PSC No. 421, & FERC Project Nos. 406 and 1971
6-3	670	PSR No. 77 & FERC Project Nos. 406 and 1971

[1] PSR = Power Site Reserve; PSC = Power Site Classification; FERC = Federal Energy Regulatory Commission.

and the State Scenic stretches of the John Day and Owyhee Rivers. The federal wild river designation precludes FERC licensing of any project under the Federal Power Act or support by any other federal agency for the construction of any water resources project on or directly affecting the designated segment.

Oregon Scenic Waterways designations do not legally limit federal authority to construct dams, or FERC authority to authorize dam construction. However, it is unlikely that any federal agency would contradict the intent of the State Scenic Waterways designations. Considering also the lack of current interest in developing any of the designated sites, the possibility of dam development is not considered relevant to a decision to recommend or not recommend the WSAs for wilderness and, therefore, is not addressed further in this EIS.

It should be noted that even wilderness designation does not absolutely foreclose dam construction, as the Wilderness Act provides that the President of the United States may authorize development of water projects in wilderness areas.

Other Federal Agencies

The Hawk Mountain WSA (OR-1-146) lies adjacent to the Big Springs Table Unit, a 65,500-acre area administratively endorsed for wilderness in the Sheldon National Antelope Refuge in Nevada.

The North Sisters Rocks (OR-12-8) and Zwagg Island (OR-12-14) WSAs are among the few offshore Oregon islands not a part of either the Three Arch Rocks National Wildlife Refuge or the Oregon Islands National Wildlife Refuge, both designated wilderness except for 95 acres of the latter which are being studied by the U. S. Fish and Wildlife Service for possible wilderness designation. BLM manages three wilderness islands in the vicinity of Sunset Bay.

The U. S. Fish and Wildlife Service funds a program of aerial shooting of coyotes to reduce predation on livestock. This program is conducted in a number of WSAs. Under wilderness management, only those predator control methods which can be directed at eliminating individual problem animals while presenting the least possible hazard to other animals or to wilderness visitors may be authorized, and only on a case-by-case basis with State Director approval.

The Soil Conservation Service conducts winter snow surveys, by aerial checks of snow markers, in some WSAs. Such practices are permitted in wilderness areas if they were established prior to wilderness designation.

State and Local Governments

The Intergovernmental Relations Division for the State of Oregon acts as a clearinghouse for the various state agencies. Agency review of BLM planning and major actions is coordinated through this clearinghouse. Planning is also coordinated with county commissioners and/or county planning commissions.

Under Oregon Senate Bill 100, all counties in Oregon are required to develop and adopt comprehensive land use controls consistent with statewide planning goals and guidelines developed by the Land Conservation and Development Commission (LCDC). Consistency of the EIS alternatives with county plans will be discussed in the Final EIS after receipt of county comments on this draft EIS. Generally, consistency of alternatives with county plans is expected to parallel consistency with state planning goals. Table 2-6 displays consistency with these goals. All of the alternatives are consistent with LCDC goals.

Other State goals and objectives considered relevant to the wilderness issue include the Basic Objectives of the Forestry Program for Oregon and the State of Oregon Wildlife Goals. Table 2-7 displays consistency with the forestry objectives,

Table 2-6. Relationship of the Alternatives to LCDC Statewide and Coastal Goals [1]

LCDC Goal Number and Description	Discussion
1. To insure citizen involvement in all phases of the planning process.	BLM's land use planning process provides for public input at various stages - from assistance in the inventory to development of alternatives, environmental analysis, and the recommendation to Congress.
2. To establish a land-use and policy framework as a basis for all decisions and actions.	The alternatives have been developed in accordance with the land-use planning process authorized by the Federal Land Policy and Management Act of 1976, which provides a policy framework for all decisions and actions. The study areas are located in eleven counties; Lake, Harney, Grant, Malheur, Gilliam, Wheeler, Crook, Baker, Jackson and Curry. BLM District Manager reviews indicate that the existing BLM management plans are in conformance with the relevant, LCDC-acknowledged, county comprehensive plan elements. Continuous BLM/county goverment consultation facilitates mutual knowledge of the status and content of each agency's natural resource related plans, programs and policies.
4. To conserve forest lands for forest uses.	Seven wilderness study areas contain a total of 3,892 acres of commercial forest lands of which 1,774 acres are currently available for the sustained yield of commercial wood fiber. Three additional WSAs have potential for production of minor forest products (i.e., firewood, poles, posts, etc.). Alternatives 1 through 6 would remove all or portions of this acreage from wood product harvest, but all alternatives would preserve both commercial and noncommercial forest lands for watershed protection, wildlife and fisheries habitat, recreation and other forest uses.
5. To conserve open space and protect natural and scenic resources.	All alternatives conserve open space. Natural and scenic resources were considered in the development of all alternatives and are most protected by alternatives 1 and 2 and least protected by alternatives 6 and 7. The LCDC definitions for cultural, historic, natural, scenic and wilderness areas are essentially the same as those used by BLM in this analysis. Research natural areas, outstanding natural areas, historic sites or areas, wild and scenic rivers, wetlands and trail systems would be protected or enhanced under all alternatives based on existing administrative or legislative designations.
6. To maintain and improve the quality of the air, water and land resources.	Water quality would be maintained or improved under all alternatives. Air quality would not be significantly impacted.
8. To satisfy the recreational needs of the citizens of the State and visitors.	Under all alternatives, opportunities would be provided to meet recreational needs. Alternatives 1 and 2 would displace a substantial amount of vehicle-oriented recreation to other areas while providing maximum opportunities for primitive recreation. Alternatives 6 and 7 could significantly reduce primitive recreation opportunities while having little effect on vehicle-oriented recreation.
9. To diversify and improve the economy of the State.	All alternatives would provide for some economic gains due to increased forage production and utilization. Other economic effects are either speculative or comparatively slight. Gains in the local and State economies would be greatest under alternatives 6 and 7, least under alternatives 1 and 2 (see tables 4-21 through 4-24).
12. To provide and encourage a safe, convenient and economic transportation system.	Alternatives 2 through 6 would have an effect on the transportation system. Closure of roads separating some WSAs in these alternatives (see table 4-5) would have minor impacts, as the roads involved are used primarily for recreation access and land management activities. Closure would not significantly hamper management activities and would displace, but not eliminate, some recreation activities.
13. To conserve energy	Alternatives 1 and 2 would have an effect on future energy transportation facility siting and could increase electric line-load losses.
17. To conserve and protect the resources of coastal shorelands.	The only WSAs relevant to this goal are two small offshore islands. All alternatives would conserve and protect these resources and provide BLM management direction compatible with the characteristics of the adjacent coastal waters.

[1] LCDC goals not generally applicable to the alternatives are: 3. Agricultural Lands; 7. Area Subject to Natural Disasters and Hazards; 10. Housing; 11. Public Facilities and Services; 14. Urbanization; 15. Willamette Greenway; 16. Estuarine Resources; 18. Beaches and Dunes; and 19. Ocean Resources

while table 2-8 addresses consistency with the wildlife goals.

In a number of WSAs, the Oregon Department of Fish and Wildlife (ODFW) has identified ancestral bighorn sheep range as suitable for reintroduction of the sheep. ODFW proposes to reintroduce bighorns in those areas as surplus animals become available due to overpopulation in other locations (see Chapter 3, Wildlife, for more specific information). ODFW conducts aerial big game censuses in many WSAs, as well as ground counts of sage grouse and chukar by vehicle in some WSAs. They also aerially stock Wildhorse Lake in the High Steens WSA (OR-2-85F) with fish. Aircraft use for such purposes would be permitted where established prior to wilderness designation, although more primitive means would be encouraged where practical. Constraints on vehicle

Table 2-7. Consistency of the Alternatives with Basic Objectives of the Forestry Program for Oregon [1]

Basic Objective	Discussion
To maintain the maximum commercial forest land base consistent with resource uses while assuring environmental quality.	Alternatives 3, 5, 6 and 7 are consistent with the benchmark (approximately 1,774 acres) of currently available commercial forest land base. Alternatives 1, 2, and 4 are inconsistent. Environmental quality would be protected to the degree specified in the Oregon Forest Practices Act. Table 3-10 displays the available commercial forest land by WSA.
To maintain or increase the allowable annual harvest level to its fullest potential to offset potential socioeconomic impacts.	Alternatives 3, 5, 6 and 7 are consistent with the benchmark of a 265 Mbf annual sustainable harvest level, while alternatives 1, 2, and 4 are inconsistent. The level of cutting that the land base can sustain is dependent on the number of acres allocated to timber production, the level of management the land base receives and the productivity of the land. Table 4-17 displays the short-term losses to commercial timber production.
To identify and implement the levels of intensive forest management required to achieve maximum growth and harvest.	A full range of intensive timber management practices for optimizing timber production would be implemented on the available commercial forest land base under alternatives 3, 5, 6, and 7. New and improved practices would be implemented consistent with technological advances.
To maintain community stability by remaining flexible for increases in future harvest levels that would offset projected shortages.	Alternatives 3, 5, 6, and 7 are most consistent with the objective of making land allocations which do not substantially decrease the commercial forest land base and thereby contribute to projected timber supply declines. Alternatives 1, 2, and 4 reduce flexibility to increase or maintain current timber harvests and affect stability of timber-dependent communities by removing 1,444 to 1,774 acres from the commercial forest land base, and reducing average annual timber harvest by 243 to 276 Mbf.

[1] Based upon the Oregon State Department of Forestry, Forestry Program for Oregon, published 1977 and updated 1982.

use could limit ground surveys. ODFW uses vehicles to maintain wildlife guzzlers in a few WSAs. Enforcement of state hunting and fishing laws involves the use of both aircraft and motor vehicles in many WSAs.

The Desert Trail, a part of the Oregon State Recreational Trails System, is identified to cross Oregon in a north-south direction. Of 65 miles of trail that have been marked, 11 miles traverse the Pueblo Mountains WSA (OR-2-81) and 15 miles pass through the High Steens WSA (OR-2-85F) from its south end to Wildhorse Lake. Most of the balance of the trail is defined only on maps. As proposed, it crosses the Blitzen River WSA (OR-2-86E) and follows the boundary road between High Steens and Little Blitzen Gorge (OR-2-86F) WSAs. A cooperative management agreement between BLM and the Desert Trail Association outlines respective responsibilities for improvements on these segments of the trail. A June 1982 report by the National Park Service (Final Desert National Scenic Trail Feasibility Report and Environmental Assessment) recommended that a Desert National Scenic Trail not be authorized.

Table 2-8. Consistency of the Alternatives with State of Oregon Wildlife Goals

Goal	Discussion
1) To maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species.	Maintenance or enhancement of wildlife habitat would vary among alternatives but alternatives 1 through 5 would generally maintain or increase population levels while preventing depletion of species. Wilderness designation would perpetuate existing unique ecosystems which would benefit wildlife by assuring habitat diversity in the managed rangelands. Ecosystem diversity would be greatest in alternatives 1 through 5; however other existing designations for Wild and Scenic Rivers, Research Natural Areas and Areas of Critical Environmental Concern would protect some areas and ecosystems in alternatives 6 and 7. Road and ORV closures would enhance habitat quality for species which are largely intolerant of human activity. Tables 2-4 and 4-6 note that timber harvests, rangeland vegetation manipulation and potential minerals exploration and mining activities would impact wildlife habitat in inverse proportion to the acres designated as wilderness. Some sagebrush and juniper control, in conjunction with range seedings, would benefit antelope and other species but would reduce habitat diversity with subsequent adverse effects on local populations of nongame species.
2) To develop and manage the lands and waters of the State in a manner that will enhance the production and public enjoyment of wildlife.	Wilderness designation would preclude or make more costly development of some wildlife and livestock water and seeding improvements. This could result in foregone opportunities to expand some wildlife populations. Elimination of timber harvests and mining (other than existing valid claims) would protect some existing habitat values. Precluded vegetative manipulation activities would eliminate some habitat management options.
3) To regulate wildlife populations and the public enjoyment of wildlife in a manner that is compatible with primary uses of the land and waters of the state and provides optimum public recreation benefits.	In all alternatives, increased wildlife populations could enhance the quality of public enjoyment of wildlife. Some hunting and fishing activity would be displaced from areas designated wilderness, resulting in lower quality experiences for some persons whose activity is displaced, but also creating higher quality experiences for some of those who continue to hunt and fish there. Non-consumptive enjoyment of wildlife by hikers, floatboaters, etc. would be highly consistent with wilderness management objectives and would increase in proportion to acres designated except where previous designations (i.e. wild and scenic rivers) provide comparable management direction for wilderness study areas.
4) To develop and maintain public access to the lands and waters of the State and the wildlife resources thereon.	Road and ORV closures would restrict public access.
5) To permit an orderly and equitable utilization of available wildlife.	Public access and use restrictions could hinder orderly and equitable utilization (including non-consumptive enjoyment) of wildlife in direct proportion to the acres designated as wilderness. On the other hand, wilderness designation would ensure that those who enjoy wildlife in a primitive setting would be able to continue to do so.

A proposed State Recreation Trail to link the Pacific Crest National Scenic Trail and the Desert Trail, tentatively named the Pacific Crest to Desert Trail (Ochoco-Malheur), would pass through the Aldrich Mountain WSA (OR-2-103).

The WSAs are currently designated Air Quality Class II (areas where deterioration that would normally accompany moderate, well-controlled growth would not be considered significant) as is most of the State of Oregon except for certain National Park and wilderness areas, which are Class I. After designation of any of these WSAs as wilderness by Congress, the State of Oregon could recommend to the U. S. Environmental Protection Agency (EPA) their redesignation as Class I (areas where nearly any air quality deterioration would be considered significant, thus allowing little or no nearby energy or industrial development). Any such proposal must include a social, economic and environmental analysis and would be subject to public hearings before EPA's consideration for approval.

Indian Tribes

The Thirtymile (OR-5-1), Lower John Day (OR-5-6), North Pole Ridge (OR-5-8), Spring Basin (OR-5-9), Badlands (OR-5-21), North Fork (OR-5-31), South Fork (OR-5-33), Sand Hollow (OR-5-34), Aldrich Mountain (OR-2-103), Homestead (OR-6-2) and Sheep Mountain (OR-6-3) WSAs lie within areas which were ceded to the U.S. Government by the Warm Springs and Nez Perce Indian Tribes by ratified treaties (the Middle Oregon Treaty and Nez Perce Treaty, respectively). These treaties reserved to the Indians rights for hunting, fishing and gathering in usual and accustomed places, and grazing stock on unclaimed land.

Utility Corridors and Facility Sites

From 1978-1983, BLM land use planning in Oregon resulted in the designation of utility/transportation corridors for all existing major facilities, that is, county roads, state highways, railroads, regional pipelines and electric (66 kV or larger) transmission lines. The designated corridors vary in width, but are generally from 2000 feet to 2 miles wide and centered on existing facility lines. Relatively small sites were also designated to facilitate common locations for microwave and radio or television signal relay stations.

BLM's utility corridor review is guided by the Federal Land Policy and Management Act of 1976 (FLPMA), Sec. 202, Land Use Planning, and Sec. 503, Right-of-Way Corridors. Application of these mandates is guided by the BLM right-of-way regulations (43 CFR 2800) and planning regulations (43 CFR 1601) as well as Washington, D.C. and Oregon State Office instruction memoranda.

BLM also used the 1980 Western Regional Corridor Study to identify other potential utility corridors and their proponents. This study was prepared by the Western Regional Corridor Study Committee, an *ad hoc* group of approximately 100 public and private electric utilities, pipeline companies, communication companies, and railroads. The intent of the study was to provide BLM, the Forest Service and other interested agencies with a schematic base of potential utility and transportation corridors to aid in the planning process.

Several WSAs are affected by proposed utility corridors. For more information regarding specific corridor proposals and potential impacts of wilderness designation or nondesignation, see the "Utility Corridor Routing and Communication Facility Siting" discussions in Chapters 3 and 4.

Chapter 3

Affected Environment

Abert Rim WSA (OR-1-101)

Introduction

This chapter describes the existing environment of the EIS area by resource for purposes of identifying potential impacts of the proposed action and alternatives in the following chapter. Although all resources were considered during the planning process, only those relevant to the issues identified in chapter 1 and impacts outlined in chapter 4 are addressed in this chapter.

Some resources or resource management issues (such as vegetation and some wildlife and water resource management issues) are not directly discussed under separate resource headings in this chapter, although they are analyzed individually in chapter 4. To avoid duplication, these issues are instead discussed under other appropriate headings (e.g., vegetation under ecosystem diversity in the Wilderness Values section of this chapter, certain wildlife values under the Wilderness Values section, and some wildlife or water management issues under the Interrelationships section of chapter 2).

Table 3-1. Acres of WSAs in this EIS by County

Oregon Counties	**Acres**
Baker	21,015
Crook	87,042
Curry	8
Deschutes	31,301
Gilliam	14,380
Grant	9,395
Harney	918,725
Jackson	5,410
Lake	290,190
Malheur	888,135
Sherman	18,759
Wheeler	5,982
Subtotal	2,290,342
Nevada County	
Humboldt	13,800
Subtotal	13,800
Total	2,304,142

General Environment

All but three of the 77 wilderness study areas (WSAs) are located east of the Cascade Mountains. Most of the acreage is in southern Harney and Malheur Counties, in the southeast corner of the state. Smaller amounts of land under wilderness study are located in Lake, Crook, Deschutes, Grant, Sherman, Wheeler, Gilliam, and Baker Counties in eastern Oregon, in Jackson and Curry Counties in western Oregon, and in Humboldt County in Nevada. Table 3-1 lists the amount of land under study in each county.

Most BLM-administered land in eastern Oregon is in the more arid parts of the region, and the same is true for the study areas. Winters are long, cool and moist, and summers are short, warm, and dry. Average annual precipitation ranges from 5 inches in the Alvord Desert WSA (OR-2-74) to 30 inches in the High Steens WSA (OR-2-85F). Most of the study areas receive about 10 to 15 inches of precipitation per year. Almost half of the precipitation falls from November through February, much of it as snow. Spring rains come in May and June, while rainfall in July, August and September usually is light.

The study areas in this EIS are located in five physiographic provinces as identified in the *Oregon Natural Heritage Plan* (1981). Over half of the study acreage in eastern Oregon is in the Basin and Range Province. Terrain in the province consists of a series of fault-block mountains enclosing basins with interior drainages. Much of the area between the mountains is rolling with low relief. Most of the precipitous fault scarps in the Oregon portion of the province, including Diablo Mountain, Fish Creek Rim, Abert Rim, Catlow Rim, Steens Mountain, and the Pueblo Mountains, are in study areas.

The Trout Creek Mountains have steep scarp faces on the east and south sides, but much of the range looks like a high plateau sloping to the north and cut by deep canyons. Steens Mountain was glaciated, and all of the major drainages on the west side of the mountain have U-shaped cross-sections and cirques. Shallow, saline lakes and playas ranging in size from less than an acre to several thousand acres are located throughout the province. In most years, the playas contain water for only short periods of the year. A portion of Summer Lake, one of the largest saline lakes in eastern Oregon, is included in the Diablo Mountain WSA (OR-1-58). A portion of the Alvord Desert and all of Coyote Lake, two of the largest playas in the province, are partially in the Alvord Desert WSA.

Almost one-third of the study area acreage is in the Owyhee Uplands Province. It is a high, gently rolling plateau which, for the most part, slopes gently to the north. Most of the province is drained by the Owyhee River. The river and its major tributary in Oregon, the West Little Owyhee, have carved deep, vertical-walled canyons in the plateau. As is the case in most of eastern Oregon, volcanic activity was responsible for much of the landscape in the Owyhee uplands province.

Relatively recent (in geologic time) lava flows cover much of the Jordan Craters WSA (OR-3-128), and somewhat older flows cover much of the Clarks Butte (OR-3-120) and Saddle Butte (OR-3-111) WSAs. Edges of lava flows form low rims in many of the other study areas. Volcanic tuff in the Honeycombs WSA (OR-3-77A) has eroded into unusual and picturesque formations. The moderate to steep slopes in study areas in the north part of the province were cut by streams flowing into the lower Malheur and Owyhee Rivers.

About one-tenth of the land in the eastern Oregon study areas falls in the High Lava Plains and Columbia Basin Physiographic Province. Much of the High Lava Plains section is formed by young lava flows of moderate relief. Cinder cones and basaltic buttes are scattered throughout the plains. In parts of the province, older volcanic flows are covered by lake deposits and wind blown materials creating a gently rolling landscape. Many of the streams are seasonal. The lava flows interrupted stream patterns, and most of the drainages have no outlets. Playas are common.

The study areas are a cross-section of the variety of landscapes in the province. The Devils Garden (OR-1-2), Squaw Ridge (OR-1-3), and Four Craters Lava Bed (OR-1-22) WSAs contain recent lava flows and other volcanic features. The Badlands WSA (OR-5-21) is a maze of low lava ridges separated by small sandy basins.

Most slopes in the Columbia Basin section of the province are moderate. The exceptions are the canyons cut by major rivers. Three of the four study areas in the Columbia Basin are in the 1,600-foot-deep canyon of the John Day River. The fourth is in the rolling uplands above the river.

About 2 percent of the total study area land is on the edge of the Ochoco, Blue, and Wallowa Mountains Province. The North Fork (OR-5-31) and Malheur River-Bluebucket Creek (OR-2-14) WSAs contain deep canyons in the transition zone between the mountain province and the lava plains to the south. The Homestead (OR-6-2) and Sheep Mountain (OR-6-3) WSAs rise steeply from the Hells Canyon of the Snake River.

The eastern Oregon study areas are in, or at the edge of, the extensive deserts and grasslands which lie between the Cascade and Rocky Mountain ranges. Sagebrush, bunchgrasses, and forbs are the most common vegetation, but many other kinds of plants also grow in the areas. Examples of other vegetation include delicate ferns in lava fissures, salt-tolerant shrubs and grasses, groves of aspen and mountain mahogany, low-growing alpine plants, ponderosa pine and Douglas fir in the transition zone between the Ochoco-Blue-Wallowa Mountains and the desert, extensive stands of juniper, and streamside oases of grasses and shrubs.

The Soda Mountain WSA (OR-11-17) is in the Siskiyou Mountains Physiographic Province of southwestern Oregon. It lies on the steep, south-facing slopes of Soda Mountain. Stands of coniferous and hardwood trees are interspersed with dense brushfields and open grassy slopes.

The Zwagg Island (OR-12-14) and North Sisters Rocks (OR-12-8) WSAs are small, steep-sided islands connected to the mainland by sandy beaches during low tides. Ocean front shrubs grow on the islands.

Wilderness Values

The study areas vary widely in size and in other ways, but all meet minimum wilderness characteristics for study consideration. Wilderness characteristics considered in the review include an area's size, naturalness, opportunities for solitude or primitive types of recreation, and special features such as ecological, geological, or other features of scientific, educational, scenic or historical value. Other wilderness-related values considered in the review include (1) the benefits to other multiple resource values and uses which wilderness designation could ensure, and (2) the extent to which designation of BLM-administered lands as wilderness would increase diversity in the National Wilderness Preservation System.

Naturalness

All of the study areas are remnants of the natural landscape that existed in primitive times. Most of them are located in the most remote and least developed corner of the state, and they are the most natural parts of the region.

All of the study areas contain some marks left by man, but as the framers of the Wilderness Act recognized, there is virtually no area left in the country that is totally devoid of man's traces. To use a phrase in the Wilderness Act, the study areas "generally appear to have been affected primarily by the forces of nature, with the imprints of man's work substantially unnoticeable."

Almost all of the study areas are grazed by livestock, and most of the marks left by man are associated with management of livestock. They include vehicle tracks (or "ways," as they are called in the wilderness review), waterholes, reservoirs, small box-like structures installed at springs to collect water, buried water pipelines, troughs, and fences. Some study areas also contain guzzlers, small aprons used to collect rainwater or snowmelt for wildlife. Evidences of past mining activities, primarily prospecting, remain in some study areas.

On some BLM lands, such ways and developments are obvious reminders of man's influence. For this reason, it was determined during the wilderness inventory that some roadless areas did not have wilderness characteristics. In the roadless areas that became study areas, however, ways and developments are substantially unnoticeable because they are screened by topography or vegetation and are visible for only short distances. Even within the parts of the study areas where one can see developments, most affect the apparent naturalness to a limited extent.

During the wilderness inventory, the influences of developments and activities outside the roadless areas were not considered unless they were so imposing that they could not be avoided. During the wilderness studies, the influences of such developments and activities on the wilderness values of the study areas were examined more closely. In a few areas, those influences were found to reduce wilderness values on the periphery.

Sagebrush is the dominant plant in many study areas, and there are indications that the plant is more common now than it was 100 years ago because of past overgrazing by livestock and the suppression of wildfire. For the same reasons, western juniper may be more common in some parts of eastern Oregon than it was 100 years ago. During the wilderness inventory, some contended that the study areas could not be considered to be in a natural condition because of the possible changes in the composition of the vegetation. BLM's position is that natural ecological processes continue to be the overwhelmingly dominant forces at work in the formation of vegetative patterns in the study areas, and that they are in an essentially natural condition.

Opportunities for Solitude and Primitive Types of Recreation

Almost all of the study areas offer outstanding opportunities for a person to be alone in a natural environment, to be removed from the presence of others in a setting that contains few reminders that others have been there in the past. For many, the vastness of the desert contributes to a sense of solitude that is deeper than that experienced in the more confined setting of a forest.

Military pilots fly low-elevation training missions over several of the study areas, and the aircraft can momentarily disrupt a visitor's solitude. Flight schedules vary considerably. At times, several aircraft can be seen and heard in a single day, but weeks can go by without any flights.

Most of the study areas offer outstanding opportunities for primitive types of recreation. Opportunities range from backpacking across the broad expanses of the Basque Hills; hiking the Desert Trail across the Pueblo Mountains; viewing expansive desert vistas from the heights of Diablo Mountain, Fish Creek Rim, Abert Rim, and Steens Mountain; exploring the maze of lava ridges and sandy basins in the Badlands; photographing fields of wildflowers in the Sheepshead Mountains; fishing in the Malheur River, Bluebucket Creek, and the North and South Forks of the Crooked River; to floating the John Day and Owyhee Rivers.

Special Features

In many of the study areas, ecological, geological, and other features of scientific, educational, scenic or historical value are as significant, in terms of the area's wilderness character, as the opportunities afforded for solitude or primitive types of recreation. The areas contain a wide range of such features. For example, geologic features in the WSAs include lava fields and associated volcanic features, an extensive system of lava tubes, a complex, maze-like system of low basalt ridges, picturesque or unusual erosional forms, the largest inland system of moving sand dunes in Oregon, landforms carved by glaciers, the basalt neck of an eroded volcano, and hot springs.

Special botanical features in the WSAs include uncommon plant communities; diverse assemblages of plants; relatively undistrubed stands of native bunchgrasses; pristine streamside vegetation communities; isolated stands of ponderosa pine in the desert; and plants of special interest (i.e., federal candidate species (categories 1 and 2) and plants on lists 1 and 2 of the Oregon Heritage Plan's "Rare, Threatened, and Endangered Plants and Animals of Oregon").

The WSAs provide habitat for many kinds of animals, but some animals living in the areas are particularly noteworthy from a wilderness standpoint. Several WSAs provide habitat for the northern bald eagle, federally listed as threatened in Oregon. Animals commonly associated with habitats similar to those found in wilderness—large areas of undisturbed habitat free from human disturbance—are referred to as wilderness-associated wildlife, and the WSAs contain several such species.

Cougar and bobcat, wilderness-associated species with restricted ranges in the desert, live in WSAs in the Trout Creek Mountains and in the Squaw Ridge Lava Bed WSA. The Soda Mountain WSA, the only study area in the Siskiyou Range, is home to cougar, bobcat, and black bear, another wilderness-associated species. Bighorn sheep, a wilderness-associated animal once eliminated in Oregon, has been reintroduced in several WSAs, and plans have been drawn to reintroduce bighorn sheep in other WSAs in the future. The Fish Creek Rim WSA is a potential site for the reintroduction of the peregrine falcon.

The kit fox, on the State of Oregon's list of "sensitive" species, may live in several WSAs east of the Alvord Desert.

The Whitehorse cutthroat trout, on BLM and the American Fisheries Society's lists of "sensitive" species and the State of Oregon's list of "species of concern," lives in WSAs on Steens Mountain and in the Trout Creek Mountains. WSAs on the Lower John Day River provide habitat for steelhead trout and chinook salmon, anadromous fish whose populations have been declining throughout the Northwest.

The East Alvord (OR-2-73A) and Alvord Desert (OR-2-74) WSAs contain an unusual diversity of reptiles and small mammals. Some of the study areas, such as those on Steens Mountain, contain strutting grounds for sage grouse. Several study areas are home to unusually large concentrations of raptors. Many WSAs contain crucial deer winter range, and a smaller number provide crucial antelope winter range. Townsend's big-ear bats, uncommon in southeastern Oregon, live in caves in the Saddle Butte WSA (Or-3-111). The High Steens WSA (OR-2-85F) contains one of two known populations of pika in southeastern Oregon and the only population of water shrew in eastern Oregon.

Most of the WSAs probably contain some cultural resources. Particularly noteworthy archaeological or historic sites have been discovered in several WSAs.

Table 3-2 shows the principal special wilderness features in the study areas.

Diversity of the National Wilderness Preservation System

One of the several criteria used to decide whether to recommend an area for wilderness designation is the extent to which designation would contribute to the diversity of the National Wilderness Preservation System. The diversity of the system is considered from three perspectives:

1. Ecosystems and landforms in wilderness areas.

2. Opportunities for solitude or primitive recreation in wilderness areas within a day's driving time (5 hours) of major population centers (standard metropolitan statistical areas).

3. The geographic distribution of wilderness areas.

The analysis of diversity in the National Wilderness Preservation System includes a consideration of existing and potential BLM, U.S. Forest Service, National Park Service and U.S. Fish and Wildlife Service wilderness areas as well as individual state wilderness areas. In accordance with the 1984 Oregon and Washington Wilderness Acts, the only Forest Service areas considered as potential wilderness are areas recommended for further planning in the RARE II wilderness studies. In other states, all RARE II units are considered to be potential Forest Service Wilderness.

Ecosystems and Landforms

Wilderness designation is a means of preserving examples of ecosystems and landforms in an unimpaired condition for future generations.

To provide a uniform basis for comparing natural systems and landforms of existing and potential wilderness areas, all BLM wilderness studies use the Bailey-Küchler system for classifying lands. This system was also used by the Forest Service in its wilderness studies. It provides a broad overview of the ecosystem geography of the United States and makes it possible to determine which ecosystems are represented in existing and potential wilderness throughout the country.

The Bailey-Küchler classification system is comprised of two conceptual building blocks. The broader, or more generalized, building block is that of the

Table 3-2. Special Wilderness Features in WSAs

		Geologic Features				Plants		
WSA No. (OR-)	WSA Name	Lava Fields and Related Features	High Fault-Block Scarps	Unusual Erosional Forms	Other Geologic Features	Uncommon Plant Communities or Diverse Plant Assemblages	Plants of Special Interest	Other Botanical Features
1-2	Devils Garden Lava Bed	X			8			11 13
1-3	Squaw Ridge Lava Bed	X				X		9 11 13
1-22	Four Craters Lava Bed	X						13
1-24	Sand Dunes				1			10
1-58	Diablo Mountain		X					
1-78	Orejana Canyon		X					
1-101	Abert Rim		X				X	10
1-117	Fish Creek Rim		X			X	X	
1-132	Guano Creek				2	X	X	
1-139	Spaulding		X					
1-146	Hawk Mountain			X				9
2-14	Malheur R.-Bluebucket Cr.							
2-23L	Stonehouse		X					
2-23M	Lower Stonehouse		X				X	
2-72C	Sheepshead Mountains		X				X	
2-72D	Wildcat Canyon							
2-72F	Heath Lake						X	
2-72I	Table Mountain						X	
2-72J	West Peak							
2-73A	East Alvord				3	X		
2-73H	Winter Range					X		
2-74	Alvord Desert				4	X	X	
2-77	Mahogany Ridge						X	
2-78	Red Mountain							
2-81	Pueblo Mountains		X		5	X	X	
2-82	Rincon		X		5		X	
2-83	Alvord Peak				6		X	
2-84	Basque Hills						X	
2-85F	High Steens		X		7	X	X	
2-85G	S. Fk. Donner und Blitzen R.						X	
2-85H	Home Creek		X					
2-86E	Blitzen River							
2-86F	Little Blitzen Gorge		X		7	X	X	
2-87	Bridge Creek							
2-103	Aldrich Mountain							
3-18	Castle Rock				6	X		
3-27	Beaver Dam Creek							11
3-31	Camp Creek			X				
3-32	Cottonwood Creek			X				
3-33	Gold Creek			X				
3-35	Sperry Creek			X				
3-47	Cedar Mountain							12
3-53	Dry Creek						X	
3-56	Dry Creek Buttes				5		X	9
3-59	Owyhee Breaks			X				
3-73	Blue Canyon				5			
3-75	Slocum Creek			X			X	10
3-77A	Honeycombs			X		X	X	
3-77B	Wild Horse Basin							
3-110	Lower Owyhee Canyon			X				
3-111	Saddle Butte	X			8			
3-114	Palomino Hills							
3-118	Bowden Hills					X		
3-120	Clarks Butte	X			8			
3-128	Jordan Craters	X			8	X	X	13
3-152	Willow Creek				6	X		
3-153	Disaster Peak				6	X		
3-156	Fifteenmile Creek				6	X	X	
3-157	Oregon Canyon		X		6	X	X	
3-162	Twelvemile Creek				6	X	X	

Animals								
Northern Bald Eagle	Existing or Potential Bighorn Sheep Habitat	Crucial Deer Winter Range	Sage Grouse Strutting Grounds	Raptor Concentration and/or Excellent Raptor Habitat	Kit Fox	Other Animals	Cultural Resources	Paleon-tological Features
		X						
X		X				15		
X		X				16	X	
							X	X
	X			X				X
	X			X				X
	X			X			X	
	X	X		X		17	X	
								X
			X	X		20		
			X					
		X				23		
		X						
	X			X	X			
					X			
					X			
	X			X	X			
				X	X			
					X	18		
					X			
					X	18 19		
		X	X		X			
		X				20		
	X	X				20 21		
	X			X	X	20		
	X	X						
				X	X			
	X	X		X		21 22 23		
			X			23		
	X		X	X		23		
		X	X	X		23		
				X		22 23		
			X	X		23		
	X	X				29		
	X			X		23		
	X			X		23		
		X				23		
		X						
						24		
X	X			X		18	X	X
X							X	
X						24		
X	X							
X	X							
X								
	X			X			X	
					X	25	X	
					X			
				X	X			
						25		
	X					15 21	X	
	X					15 21	X	
	X					15 21	X	
	X			X		15 21	X	
						15 21	X	
							X	

Table 3-2. Special Wilderness Features in WSAs (continued)

		Geologic Features				Plants		
WSA No. (OR-)	WSA Name	Lava Fields and Related Features	High Fault-Block Scarps	Unusual Erosional Forms	Other Geologic Features	Uncommon Plant Communities or Diverse Plant Assemblages	Plants of Special Interest	Other Botanical Features
3-173	Upper West Little Owyhee			X				14
5-1	Thirtymile				6		X	9
5-6	Lower John Day				6		X	9
5-8	North Pole Ridge				6		X	9
5-9	Spring Basin						X	
5-21	Badlands				6			
5-31	North Fork						X	
5-33	South Fork							
5-34	Sand Hollow							
5-35	Gerry Mountain							
5-42	Hampton Butte							
5-43	Cougar Well							
6-2	Homestead					X	X	
6-3	Sheep Mountain					X	X	
11-17	Soda Mountain					X	X	
12-8	North Sisters Rocks						X	
12-14	Zwagg Island						X	

			Animals					
Northern Bald Eagle	Existing or Potential Bighorn Sheep Habitat	Crucial Deer Winter Range	Sage Grouse Strutting Grounds	Raptor Concentration and/or Excellent Raptor Habitat	Kit Fox	Other Animals	Cultural Resources	Paleon-tological Features
						26	X	
						26	X	
						26	X	
X								
		X					X	
X				X		27		
X		X						
X		X						
						20		
						20		
X								
X							X	
		X		X		28		

Other geologic features
[1] Largest inland system of moving sand dunes in Oregon
[2] Sink lakes
[3] Hot springs
[4] Alvord Desert playa
[5] Interesting or unusual geologic formations
[6] Volcanic landforms
[7] Glacial landforms
[8] Extensive lava tubes (caves)

Other botanical features
[9] Relatively undisturbed stands of native bunchgrass
[10] Isolated stands of ponderosa pine in desert
[11] Ecotone between sagebrush steppe and forest
[12] Isolated stand of western juniper in the desert
[13] Kipukas, or areas of undisturbed native vegetation in lava fields.
[14] Pristine riparian communities

Other animals
[15] Cougar and bobcat, predators with restricted ranges in the desert
[16] Diverse or abundant wildlife
[17] Possible peregrine falcon reintroduction area
[18] Diverse community of reptiles and/or small mammals
[19] Snowy plover (listed as threatened, ODFW)
[20] Crucial antelope winter range
[21] Whitehorse cutthroat trout, on BLM and American Fisheries Society's list of "sensitive" species and State of Oregon's list of "species of concern."
[22] Only populations of northern water shrew in eastern Oregon and pika in southeastern Oregon
[23] Redband trout, a native fish with limited range and declining habitat
[24] Rocky Mountain elk in desert
[25] Townsend's big-ear bat, uncommon in southeastern Oregon
[26] Steelhead trout and chinook salmon
[27] Diverse fisheries
[28] Cougar, bobcat and bear in the Siskiyou Mountains
[29] Crucial elk winter range

X = special feature is found in WSA

ecoregion. An ecoregion is a continuous geographical area and is characterized by one or more important ecological associations that differ, at least in proportional area covered, from the associations of adjacent regions. In general, ecoregions are characterized by distinctive communities of plants and animals, climate, landform, soil, vegetation, and ecological climax. There are four hierarchal levels of ecoregions in the system, but only the top three levels have been mapped. The third-level ecoregions, which are called provinces, are used in wilderness studies since each province is unique to the first and second levels of ecoregions in the system.

The other, more detailed, building block in the Bailey-Küchler classification system is an area's potential natural vegetation. It serves as an indicator of the fourth, and most detailed, level of ecoregion. Potential natural vegetation is the vegetation that would exist today if man were removed from the scene and plant succession were then telescoped into a single moment.

Most of the eastern Oregon study areas are located in the Intermountain Sagebrush Province; the remainder are in the Rocky Mountain Forest Province. In western Oregon, the Soda Mountain WSA (OR-11-17) straddles the Sierran Forest and Pacific Forest Provinces. Table 3-3 lists the acreages of (1) the several types of potential natural vegetation in BLM study areas in Oregon, and (2) the same type of potential natural vegetation provinces represented in existing wilderness, areas administratively endorsed for wilderness designation, and other wilderness study areas managed by BLM and other federal agencies.

BLM's wilderness study policy allows for supplementing the Bailey-Küchler system to identify ecosystems and landforms at a finer level of detail than a nationwide land classification system can provide. In Oregon, the system used in the Oregon Natural Heritage Plan (ONHP) to classify terrestrial ecosystems was adopted as a means of analyzing the ecological diversity of the study areas in more detail. The system was developed by the Oregon Natural Heritage Advisory Council and The Nature Conservancy. The council is an official state board whose members are appointed by the Governor. The Nature Conservancy is a private, nonprofit organization.

The Oregon Natural Heritage Plan was prepared to fulfill the requirements of Oregon law and was adopted by the State of Oregon as a guideline for preservation of natural areas. The classification system includes separate lists of vegetative communities for each of nine physiographic provinces in the state. The provinces are the same as those described in the previous General Environment

Table 3-3. Existing and Potential Wilderness Representing Bailey-Küchler Ecosystems Found in Oregon WSAs (as of September 1, 1984)

	Existing Wilderness		Administratively Endorsed Wilderness		Other Study Areas[1]	
Bailey-Kuchler Ecosystems Represented in BLM WSAs in Oregon	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres
Province Potential Natural Vegetation						
Intermountain Sagebrush						
Sagebrush Steppe	3	41,545	3	357,400	130	4,257,606
Saltbush-Greasewood	2	19,554	2	30,740	44	1,145,485
Alpine Meadows and Barren	0	0	1	8,900	7	72,895
Rocky Mountain Forest						
Grand Fir-Douglas Fir Forest	18	1,998,141	3	129,669	4	184,289
Wheatgrass-Bluegrass	2	12,809	0	0	3	15,235
Western Ponderosa Forest	8	651,659	4	76,629	4	73,800
Sagebrush Steppe	1	32,350	4	213,772	24	280,791
Palouse Grassland						
Sagebrush Steppe	0	0	0	0	4	38,974
Wheatgrass-Bluegrass	1	28,000	0	0	6	21,143
Sierran Forest						
Mixed Conifer Forest	13	577,224	18	516,566	82	841,231
Pacific Forest						
Cedar-Hemlock-Douglas Fir Forest	9	217,497	6	257,275	13	155,167
Spruce-Cedar-Hemlock Forest	4	8,646	1	215,295	2	8

[1] Includes lands under study by BLM and other agencies.

section and were defined on the basis of similarity of climate, geology, geomorphology, soils, and vegetation.

Sufficient data are not available to uniformly map the vegetative communities and calculate acreages represented in all of the study areas. (See Table 4-3 for a list of the vegetative communities in each of the physiographic provinces that are represented in one or more of the WSAs in this EIS.) Some vegetative communities are listed in more than one province. This occurs when an ecosystem contains similar dominant species but has different complements of associated species in, or different positions in the environments of, the various provinces.

Proximity to Population Centers

House Report Number 95-540 on the Endangered American Wilderness Act of 1978 states that one of the goals of Congress is "creating parks and locating wilderness areas within close proximity to population centers." Therefore, one of the many criteria used to decide whether to recommend an area for wilderness designation is whether it is within a day's driving time of a major population center.

In applying this criterion, a day's drive is defined as 5 hours driving time. For this EIS, a standard radius of 200 miles was used to approximate a 5-hour drive, allowing for variations in terrain, directness of routes, and road types and conditions over the entire EIS area.

Population centers are defined as standard metropolitan statistical areas (SMSAs) which have populations of 100,000 or greater. An SMSA is defined by the U.S. Bureau of the Census as a county containing at least one city of 50,000 inhabitants or more plus as many adjacent counties that are metropolitan in character and are socially integrated with that central city or cities. Table 3-4 lists the population centers within one day's drive of the study areas and other existing and potential wilderness within one day's driving time of those cities.

Distribution of Wilderness Areas

The geographic distribution of existing and potential wilderness is another criterion used to decide whether to recommend an area for wilderness.

Many of the study areas are located in regions with little designated wilderness. Table 3-5 lists the number and acreage of existing and potential wilderness within 100 miles of each WSA.

Energy and Mineral Development

General Geology

The 77 wilderness study areas in Oregon are located in five physiographic provinces as identified in the Oregon Natural Heritage Plan: the Ochoco, Blue, and Wallowa Mountains; High Lava Plains and Columbia Basin; Owyhee Uplands; Basin and Range; and Siskiyou Mountains. In addition, there are two small rocky islands that are WSAs off the Oregon coast in Curry County.

The Ochoco, Blue, and Wallowa Mountains Province is located in the northeast corner of the state and is a region of variable relief including individual mountain ranges separated by faulted valleys and synclinal basins. Rocks found in this area include metamorphosed sediments and volcanics in the core of many of the mountain ranges, flanked by younger volcanic flows and tuffs. Two WSAs (Sheep Mountain, OR-6-3 and Homestead, OR-6-2) overlook Hell's Canyon of the Snake River. Bedrock in this particular area is made up of basalt, andesite, some limestone and argillite.

The High Lava Plains and Columbia Basin Province is west, north, and south of the Ochoco, Blue, and Wallowa Mountains Province. The Columbia Basin portion is a large lava plateau incised by several rivers (including the John Day River) that form steep-walled canyons. There are sand dunes in places and basalt buttes rise above the alluvial plain near Hermiston. Thick sheets of basalt were deposited as molten lava, flow upon flow during the Eocene, Oligocene and Miocene epochs. Typical sections, as seen in the canyon walls, exhibit many flows, each commonly 25 to 100 feet thick, that extend laterally for miles. WSAs in this portion of the province are adjacent to the Lower John Day River in north-central Oregon.

The High Lava Plains portion of the province contains undeformed young lava flows dotted by cinder cones and lava buttes. There are very few outflowing streams here, and as a result, there are several dry lake basins that were once filled with water during the Pleistocene epoch. Volcanism that occurred since Pleistocene times created interesting features including tuff rings and explosion craters.

Table 3-4. Population Centers Within Five Hours' Drive of Oregon WSAs and Existing and Potential Wilderness Areas (as of September 1, 1984)[1] [2]

	Existing Wilderness		Administratively Endorsed Wilderness[3]		Other Study Areas[4]	
Population Centers Within Five Hours' Drive of BLM Wilderness Study Areas	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres
Oregon						
Eugene-Springfield	40	1,766,470	9	549,441	46	935,499
Medford	32	1,679,364	34	1,037,581	121	2,658,105
Portland	45	2,809,254	3	1,191,579	18	272,432
Salem	43	1,795,240	3	1,191,579	20	385,555
Washington						
Kennewick-Richland-Pasco	42	4,088,569	9	1,056,203	33	369,910
Tacoma-Everett-Seattle	32	2,572,029	3	1,606,299	5	47,185
Yakima	45	3,719,309	3	1,606,299	15	180,105
Idaho						
Boise	16	4,741,570	18	1,225,239	133	4,949,613
Nevada						
Reno	14	1,247,084	43	1,650,871	189	5,594,532
California						
Redding	23	1,190,667	35	1,018,461	142	3,406,423

[1] Population centers are Standard Metropolitan Statistical Areas (SMSAs) with population over 100,000.

[2] A standard radius of 200 miles was used to approximate a five hour drive.

[3] Includes National Forest lands in Idaho and California and lands in National Parks and National Wildlife Refuges and Ranges in Oregon and adjacent states.

[4] Includes BLM WSAs and Forest Service further planning areas in Oregon; a BLM WSA in Washington; BLM WSAs and Forest Service RARE II areas in Idaho, Nevada, and California; and lands owned by the State of California.

The Basin and Range Province is located south of the High Lava Plains. Basin and Range terrain is characterized by north-south trending fault-block mountains and basins of internal drainage. Some mountains are horsts (upraised fault blocks) with intervening grabens (fault block valleys) and others are tilted fault blocks. The bordering grabens contain Plio-Pleistocene lake beds.

East of the Basin and Range Province is the Owyhee Uplands Province. This is an area of broad uplift, as shown by the youthful topography in the main river canyons. Rocks typical of this area are volcanically derived and mid- to upper-Cenozoic in age. Minor amounts of Quaternary alluvium occur within the Owyhee River Canyon and main tributary streams. Major structural features are not evident, although the area is a portion of the overall broad, northwest-plunging basin in this part of Oregon.

One WSA, Soda Mountain (OR-11-17), is located within the Siskiyou Mountains Province near the Oregon-California border. Exposed rocks in the area consist of basaltic andesite flows interbedded with volcanic breccias and pyroclastics.

WSAs (North Sisters Rocks, OR-12-8 and Zwagg Island, OR-12-14) are small islands and rocks located along the southern coast of Oregon. The North Sisters Rocks consist of porphyritic meta-basalt, while Zwagg Island consists of marine basalt capped by meta-sandstone. Apparently, the only potential mineral values occur primarily on the North Sisters Rocks and consist of common variety rock materials. These materials are used for producing aggregate, rip-rap, and jetty rock along the Oregon Coast.

Classification of Mineral Potential

Table 3-6 indicates the estimated geologic favorability, or potential for occurrence, for various energy and mineral resources in each WSA. Known and probable

Table 3-5. Existing and Potential Wilderness Within 100 Miles of Oregon WSAs (as of September 1, 1984)

		Existing Wilderness		Administratively Endorsed Wilderness[1]		Other Study Areas[2]	
WSA No. (OR-)	WSA Name	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres
1-2	Devils Garden Lava Bed	15	829,472	3	167,900	17	379,127
1-3	Squaw Ridge Lava Bed	15	829,472	3	167,900	17	379,127
1-22	Four Craters Lava Bed	15	829,472	3	167,900	17	379,127
1-24	Sand Dunes	15	829,472	3	167,900	17	379,127
1-58	Diablo Mountain	10	701,439	6	510,170	25	910,540
1-78	Orejana Canyon	3	105,162	3	387,000	58	2,175,897
1-101	Abert Rim	3	148,174	8	388,940	43	1,518,751
1-117	Fish Creek Rim	2	91,254	8	388,940	55	2,686,113
1-132	Guano Creek	2	91,254	8	388,940	55	2,686,113
1-139	Spaulding	2	91,254	8	388,940	58	2,914,443
1-146	Hawk Mountain	2	91,254	8	388,940	62	3,136,366
2-14	Malheur R.-Bluebucket Cr.	5	277,353	1	30,000	44	1,310,882
2-23L	Stonehouse	2	87,253	3	387,000	71	2,788,909
2-23M	Lower Stonehouse	2	87,253	3	387,000	71	2,788,909
2-27C	Sheepshead Mountains	2	87,253	3	387,000	73	2,723,314
2-72D	Wildcat Canyon	2	87,253	3	387,000	73	2,723,314
2-72F	Heath Lake	2	87,253	3	387,000	73	2,723,314
2-72I	Table Mountain	2	87,253	3	387,000	73	2,723,314
2-72J	West Peak	2	87,253	3	387,000	73	2,723,314
2-73A	East Alvord	0	0	3	387,000	79	2,914,286
2-73H	Winter Range	2	87,253	3	387,000	73	2,723,314
2-74	Alvord Desert	0	0	3	387,000	79	2,914,286
2-77	Mahogany Ridge	0	0	3	387,000	76	3,558,933
2-78	Red Mountain	0	0	3	387,000	76	3,558,933
2-81	Pueblo Mountains	1	22,809	8	388,940	66	3,239,198
2-82	Rincon	1	22,809	8	388,940	66	3,239,198
2-83	Alvord Peak	0	0	4	387,400	73	3,389,346
2-84	Basque Hills	2	91,249	8	388,940	58	2,981,170
2-85	High Steens	0	0	3	387,000	75	3,153,575
2-85G	S. Fk. Donner und Blitzen R.	1	22,809	3	387,000	72	3,275,585
2-85H	Home Creek	1	22,809	3	387,000	72	3,275,585
2-86E	Blitzen River	0	0	3	387,000	70	2,705,909
2-86F	Little Blitzen Gorge	0	0	3	387,000	75	3,153,575
2-87	Bridge Creek	0	0	3	387,000	70	2,705,909
2-103	Aldrich Mountain	6	244,753	1	30,000	24	337,024
3-18	Castle Rock	5	583,128	1	30,000	44	1,265,552
3-27	Beaver Dam Creek	5	583,128	1	30,000	44	1,265,552
3-31	Camp Creek	4	221,953	1	30,000	49	1,634,157
3-32	Cottonwood Creek	4	221,953	1	30,000	49	1,634,157
3-33	Gold Creek	4	221,953	1	30,000	49	1,634,157
3-35	Sperry Creek	4	221,953	1	30,000	49	1,634,157
3-47	Cedar Mountain	2	87,253	1	30,000	65	2,364,077
3-53	Dry Creek	2	87,253	1	30,000	50	1,815,145
3-56	Dry Creek Buttes	2	87,253	1	30,000	50	1,815,145
3-59	Owyhee Breaks	2	87,253	1	30,000	65	2,364,077
3-73	Blue Canyon	2	87,253	1	30,000	65	2,364,077
3-75	Slocum Creek	2	87,253	1	30,000	57	2,108,128
3-77A	Honeycombs	2	87,253	1	30,000	57	2,108,128
3-77B	Wild Horse Basin	2	87,253	1	30,000	57	2,108,128
3-110	Lower Owyhee Canyon	2	87,253	2	45,500	70	2,682,672
3-111	Saddle Butte	2	87,253	2	45,500	70	2,682,672
3-114	Palomino Hills	2	87,253	3	387,000	73	2,731,834
3-118	Bowden Hills	0	0	3	387,000	78	2,967,077
3-120	Clarks Butte	1	18,300	0	0	66	2,370,077
3-128	Jordan Craters	1	18,300	0	0	66	2,370,077
3-152	Willow Creek	0	0	3	387,000	77	3,581,213
3-153	Disaster Peak	0	0	3	387,000	77	3,581,213

Table 3-5. Existing and Potential Wilderness Within 100 Miles of Oregon WSAs (as of September 1, 1984) (continued)

		Existing Wilderness		Administratively Endorsed Wilderness[1]		Other Study Areas[2]	
WSA No. (OR-)	WSA Name	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres
3-156	Fifteenmile Creek	0	0	3	387,000	77	3,581,213
3-157	OregonCanyon	0	0	3	387,000	77	3,581,213
3-162	Twelvemile Creek	0	0	3	387,000	77	3,581,213
3-173	Upper West Little Owyhee	0	0	0	0	72	3,358,951
5-1	Thirtymile	16	868,117	0	0	11	151,357
5-6	Lower John Day	16	868,117	0	0	11	151,357
5-8	North Pole Ridge	16	868,117	0	0	11	151,357
5-9	Spring Basin	15	852,839	0	0	15	238,810
5-21	Badlands	14	736,663	1	122,400	18	353,499
5-31	North Fork	9	687,679	1	30,000	22	415,667
5-33	South Fork	10	726,879	2	35,500	22	431,188
5-34	Sand Hollow	10	726,879	2	35,500	22	431,188
5-35	Gerry Mountain	10	726,879	2	35,500	22	431,188
5-42	Hampton Butte	5	466,880	2	45,500	23	486,844
5-43	Cougar Well	5	466,880	2	45,500	23	486,844
6-2	Homestead	8	3,308,592	2	153,518	9	102,664
6-3	Sheep Mountain	8	3,308,592	2	153,518	9	102,664
11-17	Soda Mountain	11	731,009	18	594,241	43	702,753
12-8	North Sisters Rocks	3	423,609	5	394,631	16	279,824
12-14	Zwagg Island	5	423,609	10	415,421	29	550,134

[1] Includes lands in National Parks and National Wildlife refuges and ranges in Oregon, lands in a National wildlife refuge and range in Nevada, and land in national forests in California and Idaho.

[2] Includes BLM WSAs and Forest Service further planning areas in Oregon; BLM WSAs and Forest Service RARE II areas in California and Idaho; BLM WSAs in Nevada; and lands owned by the State of California.

energy and mineral resources in the study areas are denoted by class 3 and 4 ratings, whereas commodities with a low favorability or potential for occurrence are rated 1 and 2. The rating system also relates the geologic favorability to the amount and quality of information and evidence available in making that determination (level of confidence).

A commodity rated 4D, for example, has the highest potential for occurrence with very good evidence to support that finding. On the other hand, 1D (not 1A) is the lowest rating, indicating the lowest potential for occurrence and very good evidence to support the low rating. Minerals with no rating in a WSA were not studied in that area.

Mineral studies of the WSAs were performed by BLM geologists and private and state specialists under BLM contract, including TERRADATA; WGM, Inc.; Barringer, Inc; and State of Oregon Department of Geology and Mineral Industries. In most cases a geologic resource area (GRA) was established, encompassing one or more WSAs, and mineral potential was studied and classified within the entire GRA.

In most cases, inferred geologic conditions were used to rate the mineral character of the WSAs. Data were gathered by literature search, field reconnaissance or both. Rock chip and stream sediment samples were collected and geochemical analysis performed in areas where there was little information on possible mineralization. There has been some scattered exploratory drilling, with the results in some cases showing the potential for oil and gas or geothermal resources.

Areas of Critical Mineral Potential (ACMPs)

Due to longstanding concerns on the part of the BLM

Table 3-6. Mineral Potential Classifications in the WSAs

WSA No. (OR-)	WSA Name	Bentonite	Beryllium	Cinders	Copper[1]	Diatomite	Gold	Limestone	Lithium	Mercury[1]	Molybdenum	Optical Calcite	Perlite	Potassium	Sodium	Silver[1]	Slab Lava	Tin[1]	Zeolites	Zinc[1]	Coal	Geothermal	Oil & Gas	Tar Sands/Oil Shale	Uranium/Thorium	Remarks, other Minerals
1-2	Devils Garden Lava Bed	1B		4D[2]		2B	3B	1C		3B			2B[2]			3B	4D[2]		2B[2]	3B	2B	3B	2A		1A	
1-3	Squaw Ridge Lava Bed	1B		4D[2]		2B	2B	1C		2B						2B	4D[2]		1B		2B	3B	2A		1A	
1-22	Four Craters Lava Bed	1B		4D[2]		2B	2B	1C		2B						2B	4D[2]		1B		2B	3B	2A		1A	
1-24	Sand Dunes	1B			2B	3B[2]	2B	2B	2B[2]	2B				2B[2]	2B[2]	2B			2B		2B	3B	3B		1A	
1-58	Diablo Mtn.	2C				3C[2]	2B	4D[2]	3B	2B				3B	3B[2]				1C		2B	4D[2]	3B[2]		1A	Boron: 3B
1-78	Orejana Canyon	1A				3B[2]		1A					2B						2B		2B	2B	2A		1A	
1-101	Abert Rim	2B				2B[2]	3B	1C		3B						3B			1C		2B	3B[2]	2A		1A	
1-117	Fish Creek Rim	1A				3B[2]	3B	1C		3B						3B			2B		2B	4D[2]	2A		1A	
1-132	Guano Creek	1A				3B[2]	3B	1C		3B						3B			2B		2B	2B	2A		1A	
1-139	Spaulding	3B				3B[2]	3B	1C		3B						3B			2B		2B	2B	2A		2B[2]	
1-146	Hawk Mtn.	3B[2]			3B[2]	3B[2]	3B[2]	1A		3B[2]						3B[2]			2B[2]		2C	3B[2]	2B		1A	
2-1	Malheur R-Bluebucket Cr.	2A				3A		1C											2C		2B	1B	3B	1C	1A	
2-23L	Stonehouse	2A				3A[2]		1B		2B					2A				2A		2C	1B	2A	1C	1A	
2-23M	Lower Stonehouse	2A				3A[2]		1B		2B					2A				2A		2C	1B	3B	1C	1A	
2-72C	Sheepshead Mtn.	2A			3B[2]	3B[2]	3B[2]	2A		3B[2]					2A	3B[2]			3B		2C	1B	3B	2A	1B	
2-72D	Wildcat Canyon	2A			3B[2]	3B[2]	3B[2]	2A		3B[2]					2A	3B[2]			2A		2C	3B[2]	3B	2A	1B	
2-72F	Heath Lake	2A			3B[2]	3B[2]		1B		2B					2A				2A		2A	1B	3B	1B	2C	
2-72I	Table Mtn.	2A			3B[2]	3B[2]		2A		2B					2A				2A		2C	4D[2]	3B	1C	1A	
2-72J	West Peak	2A			3B[2]	3B[2]		2A		2B					2A				2A		2C	4D[2]	3B	1C	1A	
2-73A	East Alvord	2C[2]				3B[2]		1C		2B									2C		2C	4D[2]	3B	1C	1A	
2-73H	Winter Range	2A				3A[2]		1B		2B					2A				2A		2C	4D[2]	3B	1C	1A	
2-74	Alvord Desert	2C[2]				3B[2]		1C		2B									2C		2C	4D[2]	3B	1C	1A	
2-77	Mahogany Ridge	2B				3C[2]		1C		3C[2]									2A		1C	2B[2]	2A	1C	2B	
2-78	Red Mountain	2B				3C[2]		1C		3B									2A		1C	2B[2]	2A	1C	2B	
2-81	Pueblo Mtns.	2B			4D[2]	2B	4D[2]	2C		4D[2]	4D[2]				2A	4D[2]			2B		1D	3B[2]	2B	1D	2B	Partially within an ACMP
2-82	Rincon	2A			3B[2]	3A[2]	3B[2]	1A		3B[2]									1A		2C	2B[2]	2B	1C	1A	
2-83	Alvord Peak	2A			4D	2A	4D	1C		4D									2A		1C	4D[2]	2A	1C	2B	
2-84	Basque Hills	2A			3A	3A[2]	3A	1A		3A									1A		2C	2B[2]	2B	1C	1A	
2-85F	High Steens	3B[2]			4D	1C	4D	1D		4D	4D				2A	4D			3B[2]		1D	4D[2]	2B	1D	2B	
2-85G	S. Fork Donner & Blitzen	1A				3C[2]		1C											1A		1B	1D	2A	1C	1A	
2-85H	Home Creek	1A				3C[2]		1C											1A		1B	1D	2A	1C	1A	
2-86E	Blitzen River	2A			4D[2]	2A	4D[2]	1D		4D[2]	4D[2]				2A	4D[2]			2A		1D	2B	2B	1D	1C	
2-86F	Little Blitzen Gorge	1C			4D[2]	1C	4D[2]	1D		4D[2]	4D[2]				1B	4D[2]			1B		1D	2B	2B	1D	1C	
2-87	Bridge Creek	1A				3C[2]		1C											1A		1B	2B	2A	1C	1A	
2-103	Aldrich Mtn.	2C				1C		1B											1B		2B	1C	2B	2A	1A	Asbestos[1]: 3B, Chromium[1]: 3B
3-18	Castle Rock	2A				3A		1C											2C		2B	3C[2]	3B	1C	1A	
3-27	Beaver Dam Creek	2A				3A	2B[2]	1C											2C		2B	1B	3B	1C	1A	
3-31	Camp Creek	3A					3B[2]	1B		3A[2]		3C	3B			3A[2]			2C		1C	1B	3B	1C	1B	
3-32	Cottonwood Creek	3A					3B[2]	1B		3A[2]		3C	3B			3A[2]			2C		1C	1B	3B	1C	1B	
3-33	Gold Creek	3A					3B[2]	1B		3A[2]		3C	3B			3A[2]			2C		1C	1B	3B	1C	1B	
3-35	Sperry Creek	3B				2B	2B	1C		2B		4C	3C			2B			2B		1B	1B	3B	1C	1B	
3-47	Cedar Mtn.	2A				2C		1C											1A		1B	2B	3B	2B	1A	
3-53	Dry Creek	3A				3A	2C	1C		2C		3D				2C			3B		1B	1B	3B	1C	1B	
3-56	Dry Creek Buttes	3B				2B	4C[2]	1C				3C				4C[2]			3C		1B	2B	3B	2B	3B[2]	
3-59	Owyhee Breaks	3B					3B	1B		3B[2]						3B[2]		2B	3B		1B	3B	3B	3B	3B[2]	
3-73	Blue Canyon	3B				2B	3B[2]	1C								3B[2]			3B		1B	3C	3B	2B	1A	
3-75	Slocum Creek	3B					3B	1B					3B					3B	3B		1B	2B	3B	1B	1B	Pumice: 3B
3-77A	Honeycombs	3B				1B	3C	1C		3B		2C	3C			3C			2C		1B	2B	3B	1C	2B	
3-77B	Wild Horse Basin	2B				1B	2C	1C		2C		4C	3C			2C			1B		1B	4C	3B	1C	1B	
3-110	Lower Owyhee Canyon	3B					3C	1B		3C	3B					3C		2B	3B		1B	3B	3B	2A	1B	Fluorite[1]: 3B
3-111	Saddle Butte	2B[2]				2B[2]	3B[2]	1C			3B[2]								2B[2]		1C	2B	3B	1C	2B[2]	
3-114	Palomino Hills	2A				3B[2]		2A		2B					2A				3B[2]		1B	2B	3B	1C	1A	
3-118	Bowden Hills	2A				1B	3B[2]	1B		2B						2B			2B		1B	3C[2]	3B	1B	1A	
3-120	Clarks Butte	1B				1B	2B	1B		2B						2B			1B		1C	3B	3B	1B	1B	

3-128	Jordon Craters	1B			1B	2B	1B		2B				2B		1B		1C	3B	3B	1B	1B	
3-152	Willow Cr.	1C	2C		2B	2C	1C	3A	3C				3C[2]	2C	3A		1C	3B	2B	1C	2C	
3-153	Disaster Peak	1C	3C[2]		2B	3C[2]	1C	3A	2C				2C	2C	3A		1C	3B	2B	1C	2C	
3-156	Fifteenmile Cr.	1C	2C		2B	2C	1C	3A	3C[2]				3C	2C	3A		1C	3B	2B	1C	3C[2]	
3-157	Oregon Canyon	1C	2C		2B	3C[2]	1C	3A	3C[2]					2C	3A		1C	3B	2B	1C	3C[2]	
3-162	Twelvemile Cr.	1C	2C		2B	3C	1C	3A	2C				3C		3A		1C	3B	2B	1C	3C[2]	
3-173	Upper West Little Owyhee	2B	2C				1B		3A						3B		2B	3A	3B	2B	1B	Manganese[1]: 3B[2]
5-1	Thirtymile	1B			1B	3C[2]	1B	3C[2]	3C[2]		1B	1B			1B	3C[2]	1B	1C	3C	1B	3B	
5-6	Lower John Day	1B			1B		1B				1B	1B			1B		1B	1C	3C	1B	1A	Metallic Minerals: 2C
5-8	North Pole Ridge	1B			1B	3C	1B				1B	1B	3C		1B		1B	1C	3c	1B	1B	
5-9	Spring Basin	2C			2C		2C	3C[2]	3C[2]	3C[2]	2B	2B			2C	3C[2]	1B	1C	3C	1B	1B	Semi-precious: 3C[2]
5-21	Badlands	2B			2B		2B				2B	2B			2B		1B	3C	2C	1B	1B	Sand and Gravel: 3C Metallic Minerals: 2B
5-31	North Fork	3C[2]			2C		2C				2B	2B			3B[2]		1B	1C	4C	1B	1B	Metallic Minerals: 2B. ACMP
5-33	South Fork	2C			2C		2C				2B	2B			2C		1B	1C	4C	1B	2B	Metallic Minerals: 2B, Semi-precious: 4D[2]. ACMP
5-34	Sand Hollow	4D[2]		2B	2C		2C				2B	2B			3C[2]	2B	1B	1C	4C	1B	2B	ACMP
5-35	Gerry Mtn.	4D[2]	2B		2C		3C				2B	2B			3C[2]	2B	1B	1C	4C	1B	1B	Tungsten [1]: 2B. ACMP
5-42	Hampton Butte	2C	2B		2C		2C				2B	2B			2C		1B	1C	4C	1B	1B	ACMP
5-43	Cougar Well	2C			2C		2C				2B	2B			2C		1B	1C	4C	1B	1B	Metallic Minerals: 2B. ACMP
6-2	Homestead	1C		4D	1C	4D	2B								1C		1C	1B	1C	1C	1C	
6-3	Sheep Mtn.	1B		3B		3B	2B								1B		1C	1B	1C	1C	1C	
11-17	Soda Mtn.	1A		3B[2]	1A	3B[2]	1A		3B[2]	3B[2]	1A	1A	3B[2]		1A		2B	2A	3A	2B	2B	Mineral Materials: 3C Lead[1]: 3B[2]
12-8	North Sisters Rocks																					Moderate potential for aggregate, riprap, and jetty rock materials
12-14	Zwagg Island																					No mineral potential

Legend:

Class 1: Lack of indications of favorability
2: Low favorability
3: Moderate favorability
4: High favorability

Confidence Level A: Insufficient data or no direct evidence.
B: Indirect evidence available.
C: Direct evidence but quantitatively minimal
D: Abundant direct and indirect evidence.

[1] Strategic and critical minerals

[2] Classifications are the highest rating in part of the WSA. All others apply to the entire acreage within the WSA.

ACMP = Area of Critical Mineral Potential

and the public regarding the availability of public lands for mineral exploration and development, there was a call for nominations of Areas of Critical Mineral Potential (ACMP) in 1982. ACMPs are areas that were nominated by the public as having mineral potential that is important to the local, regional or national economy or that could become important in the future. They are used by BLM to reevaluate areas under existing or "de facto" withdrawals (from mineral location and leasing).

The ACMPs were nominated with regard to particular mineral commodities, although other minerals of less significance may be present. Of the seven ACMPs involved in this EIS, six were nominated with regard to oil and gas, and the seventh was nominated for high potential occurrences of gold and mercury.

Six WSAs are completely within ACMPs and a seventh is partially within an ACMP (see table 3-6, Remarks).

Strategic and Critical Minerals

Strategic and critical minerals are defined by law (Strategic and Critical Materials Stock Piling Revision Act of 1979 as materials needed to supply the military, industrial, and essential civilian needs of the United States during a national defense emergency. These materials are not found or produced in this country in sufficient quantities to meet such needs. Strategic and critical minerals determined to have a moderate to high potential for occurrence in WSAs in Oregon include copper, lead, and zinc, which are used in large quantities and have a pervasive influence on the economy and national well-being. Manganese is on the stockpile list due to its special properties not readily found in other materials. Tin and chromium are listed because they are not produced in this country in sufficient quantities, and we rely on imports to supply nearly all of our domestic needs. Other strategic and critical minerals with moderate to high potential for occurrence in the WSAs include asbestos, mercury, silver, and fluorite.

Mineral Exploration in Oregon

A six-year trend of growth in reported mineral exploration expenditures in Oregon reversed in 1982 (see table 3-7). Private companies spent an estimated $9.5 million in 1982 compared to an estimated $11.2 million in 1981 in search of new ore deposits. Metallic mineral exploration was concentrated in Baker and Grant Counties in the Blue Mountains of northeastern Oregon, in the Klamath Mountains in southwest Oregon, and in the volcanic areas of Harney, southern Lake, and northern Malheur counties. The principal target of exploration efforts in 1982 was gold, with lesser emphasis on base metals.

The greatest exploration expenditures in Oregon were made in the search for petroleum and natural gas.

Table 3-7. Private Sector Mineral Exploration Expenditures in Oregon (millions of dollars) [1]

Year	Metals	Oil & Gas	Geothermal
1982	$ 9.50	$23.00	$2.30
1981	11.20	31.20	5.11
1980	5.62	25.80	2.79
1979	4.04	10.70	1.93
1978	4.44	4.60	1.30
1977	3.60	2.00	0.60
1976	2.30	2.00	1.40

[1] From "The Oregon Geology" published by the State of Oregon, Department of Geology and Mineral Industries.

Here too, the expenditure declined to $23.0 million in 1982 compared to $31.2 million in 1981. The majority of exploration money was spent in northwest Oregon near the Mist gas field.

Geothermal energy exploration in 1982 was $2.3 million compared to $5.11 million in 1981. Lately, most geothermal interest in Oregon has shifted from the Basin and Range province in the east to the Cascade Range.

Present mineral production activity in the Oregon WSAs is minimal.

Water Quality

Within or adjacent to a number of the WSAs are portions of eight river systems. They are the Donner und Blitzen, Deschutes, Crooked, John Day, Malheur, Owyhee, Kings and Snake Rivers. These eight rivers plus numerous tributaries drain the majority of the approximately 3,600 square miles within the WSAs.

Most of the WSAs have low to moderate rainfall, ranging from 5 inches annually east of the Steens Mountains to 30 inches at higher elevations. Most of the precipitation falls between November and May, often in the form of snow. The streams and rivers have highly fluctuating flows during the late winter and spring. As an example, the Owyhee River at Rome, Oregon can have flows varying between 1,000 and 30,000 cubic feet per second (cfs) during the winter and spring. By mid to late summer, river flows can drop to 100 to 200 cfs. By late summer, many of the tributary streams will develop pools and retain very low subsurface flows or dry up completely.

According to the Oregon Department of Environmental Quality (ODEQ 1976), instream water quality is generally good, except during the summer when low dissolved oxygen levels and high water temperatures, pH, and fecal coliform bacteria counts occur. These problems are primarily due to cattle grazing and solar heating on diminishing flows and unshaded streams.

The water quality in the Malheur and Owyhee River Basins in Malheur County was below acceptable standards established under the Oregon Administrative Rules, Chapter 340. A more recent water sampling program (Malheur County, 1980) verified that water quality was poor in the sections of the Lower Malheur and Owyhee Rivers that drain irrigated row cropland, but was generally in good condition in the upper reaches of streams flowing through public lands which include several WSAs.

Sediment yields are generally low (.1 to .2 acre-feet per square mile per year). Stream bank erosion is probably the major contributor to sediment in streams.

Groundwater quality is generally good throughout the areas; dissolved solids are usually less than 1,000 milligrams per liter. Excessive sodium, boron, and arsenic cause problems in some places (Pacific Northwest River Basins Commission 1970).

Wildlife

Animal distribution, diversity, and abundance are dependent on various factors; of primary importance are food, cover, and water distribution. Due to their scarcity, water and vegetation associated with water are very important to wildlife in semiarid eastern Oregon. Riparian areas with trees, shrubs, and herbaceous species provide the greatest habitat diversity and provide nutritious green forage late in the summer when upland vegetation has dried. The greatest wildlife species concentration and diversity occur in riparian areas.

Each wildlife species exhibits a different degree of adaptability in the number of plant communities and successional stages it can use for feeding and reproduction (Thomas *et al.*, 1979). The sensitivity of each species to change is directly related to its adaptability, with the most adaptable species being the least sensitive to change. Examples of adaptable species include the coyote, common raven, bushy-tailed woodrat, bobcat, American robin, great horned owl, northern flicker, and red-tailed hawk. Examples of species with a low adaptability include sage grouse, sage sparrow, pinyon jay and several chubs (fish).

Big Game Species

Oregon supports a variety of economically important big game species. Mule deer and antelope are widespread throughout much of eastern Oregon. Rocky Mountain elk are found in 12 WSAs, favoring locations of rugged topography where timber stands are interspersed with meadows and grassland openings.

Bighorn sheep have been reintroduced into 13 of the WSAs, and the Oregon Department of Fish and Wildlife (ODFW) proposes reintroducing sheep in 18 other WSAs. These study areas generally have steep rugged topography, high meadows, fault blocks, breaks, and isolated canyonlands. Although black bear are found in both eastern and western Oregon, they are only found in a few WSAs. Soda Mountain WSA (OR-11-17) in southwest Oregon near the California border provides habitat for Roosevelt elk and black-tailed deer.

Deer, elk, antelope, and bighorn sheep concentrate on winter ranges when snow forces them out of higher elevations. Food and cover provided by winter habitat are especially important because animal fat reserves decrease during the winter. Winter ranges are the first areas to have green grasses and forbs in the spring and are needed by wildlife to improve their weakened condition at that time of year. Winter ranges for deer are located in 35 WSAs, for elk in 4 WSAs, for antelope in 21 WSAs, and for bighorn sheep in 6 WSAs.

Upland Game Birds

Sage grouse are found in most of the WSAs where there is a mosaic of big and low sagebrush types. Strutting grounds and nesting areas are crucial habitat because grouse mate each year in these clearings in the sagebrush. Most nesting occurs within two miles of a strutting ground.

Sagebrush, besides being important as food, provides necessary escape and nesting cover. Upland meadows and meadows along streams are crucial habitat because they supply insects and succulent forbs to young birds (Savage 1969). A general hunting season for sage grouse has not been allowed in Oregon since 1975 because of low populations, although a restricted number of specific permits for sage grouse hunting have been offered in some wildlife management units in recent years.

Chukar, the most common game bird, concentrate in steep rocky areas adjacent to streams and water developments and are abundant along the talus slopes and numerous canyons of eastern Oregon. California quail are closely associated with brushy riparian areas at elevations below 6,000 feet throughout Oregon. Mourning doves are spring-through-fall breeding residents with most nesting occurring in juniper trees. Mourning doves begin migrating south to winter areas after the first autumn rains.

Raptors

Many WSAs contain numerous breaks, fault blocks, rims, and rugged canyons which provide excellent nesting sites for raptors. These vertical rock walls are very important as secure places for a variety of raptors to nest and rear their young. Prairie falcons, for example, use high cliffs because the cliffs have predictable thermals and their height provides security from ground-dwelling predators. Other raptors commonly nesting in the WSAs include golden eagles, American kestrel, red-tailed hawk, great horned owl, sharp-shinned hawk, turkey vulture and Swanson's hawk.

Other Mammals, Birds, Reptiles, and Amphibians

Approximately 350 nongame species (amphibians, reptiles, birds, and mammals) inhabit the WSAs, including black-tailed jackrabbit, sage sparrow, beaver, ravens, western rattlesnake and tree frog. Some species such as beaver are found in specific habitats; others such as deer mice occur throughout the WSAs.

North Sisters Rocks (WSA OR-12-8) and Zwagg Island (WSA OR-12-14) receive only minimal use by marine mammals and by pelagic (sea) birds.

Fish

Native fish in the WSAs include rainbow, redband and cutthroat trout, minnows such as dace and redside shiners, chubs, bridgelip suckers, mountain whitefish, and sculpins. Steelhead trout and chinook salmon migrate and spawn in the John Day River, which traverses the Thirtymile (OR-5-1), Lower John Day (OR-5-6), North Pole Ridge (OR-5-8), and Spring Basin (OR-5-9) WSAs. Rainbow trout are native in Camp and Dutch Oven Creeks in the Soda Mountain WSA (OR-11-17).

Some fish are relicts of once widespread species which evolved in isolation into new species and subspecies having a limited range. Because of limited range and declining habitat, the American Fisheries Society has recognized several fish species as being of "special concern" (Deacon *et al.*, 1979), four of which are found in Oregon WSAs: redband trout, Whitehorse cutthroat trout, Alvord chub, and the Catlow Tui chub.

Redband trout are native to southeastern Oregon. As a result of the introduction of rainbow trout, the redband trout populations have been greatly reduced through hybridization. The redband population in Threemile Creek and Home Creek (Home Creek WSA, OR-2-85H), one of the few remaining pure strains, has been used by ODFW as a source of brood stock for hatchery rearing (Wilmont 1974).

Whitehorse cutthroat trout has been introduced from Whitehorse Creek (in Fifteenmile Creek WSA, OR-3-156) to Van Horn and Denio Creek (in Pueblo Moutains WSA, OR-2-81), Mosquito Creek (in High Steens WSA, OR-2-85F), Antelope Creek (in Twelvemile Creek WSA, OR-3-162), and elsewhere. The Alvord chub is found in several springs and desert streams in Pueblo Valley (including Pueblo Mountains WSA). The Catlow Tui chub is restricted to several creeks in Catlow Valley (including Home Creek in Home Creek WSA, OR-2-85F).

Rainbow trout, Lahontan cutthroat trout, crappie, and both smallmouth and largemouth bass are planted in suitable streams and reservoirs to maintain sport fisheries.

Threatened and Endangered Species

The American peregrine falcon is listed as endangered and the northern bald eagle is listed as threatened in Oregon under the Endangered Species Act of 1973. Although peregrine falcons migrate through Oregon, observations are rare and no active nests have been found in any of the WSAs. Wintering bald eagles are attracted to the areas by concentrations of migrating waterfowl and deer, especially from December through March. Bald eagles in the Snake, Owyhee, John Day, and Crooked River canyons have utilized WSAs as winter roost sites. Wintering bald eagles have also been observed foraging in the Devils Garden (OR-1-2), Squaw Ridge (OR-1-3), and Four Craters Lava Beds (OR-1-22) WSAs.

The Western snowy plover and kit fox are classified as threatened by ODFW (ODFW, 1975). The snowy plover, which is also a candidate for federal listing, nests along the eastern edge of the Alvord playa in the Alvord Desert WSA (OR-2-74). The kit fox's northernmost range extends into the southeast corner of Oregon and potentially includes the Rincon (OR-2-82) and Basque Hills (OR-2-84) WSAs, as well as all WSAs east of the High Steens WSA (OR-2-85F) as far north as the Sheepshead Mountains WSA (OR-2-72C).

Livestock Grazing

Public lands within the WSAs play an important role in providing livestock forage. In the 77 WSAs combined, about 152,000 AUMs (animal unit months, the amount of forage needed to sustain one cow and a calf, or equivalent animals for one month) of forage are licensed for livestock use each year. In Oregon, as a whole, an average of 954,000 AUMs of forage is utilized by livestock on BLM lands each year.

Most of the WSAs contain livestock improvements. These improvements include: 499 reservoirs and waterholes, 116 developed springs, 13 wells, 9 miles of pipeline, 3,182 miles of fence, 3 wild horse traps, and 23 corrals referred to as structural projects; and 9,200 acres of seeding, 2,680 acres of brush control and 3,160 acres of juniper cutting, referred to as vegetative manipulations projects. Livestock operators use existing ways to check livestock, distribute salt and to inspect or maintain range improvements. Ways are used for hauling water for livestock in 5 WSAs: Four Craters Lava Bed (OR-1-22), Sheepshead Mountains (OR-2-72C), West Peak (OR-2-72J), Basque Hills (OR-2-84), and Badlands (OR-5-21).

Grazing systems have been designed which allow for livestock use to meet specific resource objectives for particular allotments. In most cases, implementing new or modified grazing systems to improve or maintain livestock forage condition depends on new, proposed structural range improvements and vegetative manipulation projects. These range improvements would produce an additional 27,100 AUMs above existing use levels; of this amount, approximately 10,000 AUMs would be realized from cost effective (at least a 1:1 benefit/cost ratio) improvement projects. Proposed vegetative manipulation projects would produce about 12,500 AUMs, or 46 percent, of the predicted increase from range improvements. Table 3-8 shows both existing and potential AUMs of livestock forage by WSA.

A total of 35,121 AUMs of livestock forage in 13 WSAs is currently available, but has not yet been allocated. This forage has become available as a result of past livestock projects and improved management practices. The plans proposing to allocate this forage

Table 3-8. Existing and Potential Livestock Use in WSAs

WSA No. (OR-)	Total Licensed Livestock Use (AUMs)	Total Potential Increase in Licensed Use[1] (AUMs)	Potential Increase with Positive Benefits (AUMs)	Potential Based on Vegetation Manipulation (AUMs)	Potential Based on Structural Projects and Better Management	Proposed Allocation of Existing Forage Available Now in Pastures But Not Allocated (AUMs)
1-2	1,289	0	0	0	0	0
1-3	1,175	0	0	0	0	0
1-22	623	0	0	0	0	0
1-24	354	0	0	0	0	0
1-58	471	117	0	0	117	0
1-78	777	226	0	226	0	0
1-101	708	0	0	0	0	0
1-117	778	164	0	164	0	0
1-132	575	0	0	0	0	0
1-139	3,580	776	0	776	0	0
1-146	3,970	440	0	440	0	0
2-14	650	0	0	0	0	0
2-23L	2,280	205	205	205	0	0
2-23M	530	400	400	150	250	0
2-72C	2,103	3,965[2]	3,965[2]	1,215	765	1,985[2]
2-72D	1,867	3,085[2]	3,085[2]	280	820	1,985[2]
2-72F	835	1,200	1,200	500	700	0
2-72I	1,678	1,150	1,150	130	1,020	0
2-72J	390	700	700	350	350	0
2-73A	593	0	0	0	0	0
2-73H	438	0	0	0	0	0
2-74	8,870	7,659[2]	7,659[2]	0	750	6,909[2]
2-77	3,900	0	0	0	0	0
2-78	980	0	0	0	0	0
2-81	4,475	0	0	0	0	0
2-82	9,490	0	0	0	0	0
2-83	1,500	0	0	0	0	0
2-84	5,975	7,255	0	6,330	925	0
2-85F	4,431	208	208	0	208	0
2-85G	4,800	1,950	1,950	0	1,950	0
2-85H	2,667	0	0	0	0	0
2-86E	4,322	1,737	1,737	0	1,737	0
2-86F	1,213	0	0	0	0	0
2-87	1,223	1,470	1,470	0	1,470	0
2-107	231	0	0	0	0	0
3-18	1,303	0	0	0	0	0
3-27	2,782	0	0	0	0	0
3-31	2,146	200	200	0	200	0
3-32	707	0	0	0	0	0
3-33	1,964	100	100	0	100	0
3-35	849	60	0	0	60	0
3-47	2,637	150	0	0	150	0
3-53	2,939	40	0	0	40	0
3-56	2,241	100	0	0	100	0
3-59	1,399	0	0	0	0	0
3-73	1,679	80	0	0	80	0
3-75	356	40	0	0	40	0
3-77A	1,755	40	0	0	40	0
3-77B	1,513	0	0	0	0	0
3-110	7,554	13,575[2]	13,575[2]	0	193	13,382[2]
3-111	2,762	10,831[2]	0	0	0	10,831[2]
3-114	1,282	4,870[2]	4,870[2]	0	450	4,420[2]
3-118	1,165	2,004[2]	2,004[2]	0	170	1,834[2]
3-120	989	1,888[2]	1,888[2]	840	50	998[2]
3-128	1,605	1,164[2]	0	0	0	1,164[2]
3-152	3,896	25	0	0	25	0
3-153	6,268	0	0	0	0	0

Table 3-8. Existing and Potential Livestock Use in WSAs (continued)

WSA No. (OR-)	Total Licensed Livestock Use (AUMs)	Total Potential Increase in Licensed Use[1] (AUMs)	Potential Increase with Positive Benefits (AUMs)	Potential Based on Vegetation Manipulation (AUMs)	Potential Based on Structural Projects and Better Management	Proposed Allocation of Existing Forage Available Now in Pastures But Not Allocated (AUMs)
3-156	5,226	400	400	115	285[3]	0
3-157	2,601	215	215	0	215	0
3-162	2,082	575	260	315	260[3]	0
3-173	3,266	5,770[2]	0	0	0	5,770[2]
5-1	406	0	0	0	0	0
5-6	803	0	0	0	0	0
5-8	334	0	0	0	0	0
5-9	72	0	0	0	0	0
5-21	1,057	56	0	56	0	0
5-31	430	72	72	0	72	0
5-33	1,229	941	941	91	442	408
5-34	392	323	0	55	98	170
5-35	1,526	612	612	0	357	255
5-42	775	104	104	25	79	0
5-43	1,350	392	0	258	134	0
6-2	630	0	0	0	0	0
6-3	30	30	0	0	30	0
11-17	317	0	0	0	0	0
TOTAL	152,058	62,254	45,000	12,521	14,612	35,121

[1] Livestock use increases within a WSA will not necessarily result in increased licensed use in overall allotments.

[2] Part of this forage is in a pasture (or pastures) that overlap two or more WSAs. The column total omits double-counting of the AUMs from these pastures.

[3] A proposed fence is common to two WSAs. Column totals do not double-count 120 AUMs associated with the fence.

to livestock were not completed until after passage of FLPMA in 1976, which placed constraints on such allocations in lands under consideration for wilderness, pending an assessment of whether the allocations would impair wilderness values. These AUMs can be allocated to livestock to the extent that livestock use of this forage does not have an adverse effect on wilderness qualities.

Table 3-8 also lists potential increases from allocating available but unallocated forage.

Table 3-9 shows the proposed range improvements for each WSA.

The appendices discuss the number of grazing allotments, the forage allocations, and the period of livestock use for each of the WSAs.

Utility Corridor Routing and Communication Facility Siting

During scoping of the EIS, 20 wilderness study areas were initially identified as potentially conflicting (if designated wilderness) with the expansion of existing corridors or designation of potential new corridors. These conflicts were reviewed by the utility interests most likely to need new facilities in the vicinity of the WSAs, and as a result, the potential conflicts were redefined .

Map 7 shows the existing and proposed utility corridors in or near the wilderness study areas.

Only the Saddle Butte (OR-3-111) and Basque Hills (OR-2-84) WSAs represent significant obstacles to future corridors according, to Pacific Power & Light Company and the Bonneville Power Administration. Although numerous WSAs are bounded by existing powerlines or roads with parallel powerlines, the option is always available to construct new facilities within the designated corridor and parallel to the existing right-of-way but opposite the potential

Table 3-9. Proposed Range Improvements in WSAs

WSA No. (OR-)	Range Improvements Reservoirs, Storage Tanks & Waterholes	Springs	Wells	Miles of Pipeline	Miles of Fence	Acres of Seeding	Acres of Vegetation Control
1-78	0	0	0	0	0	0	960
1-101	1	1	0	0	0	0	0
1-117	1	0	0	0	1	800	0
1-132	2	0	0	0	0	0	0
1-139	7	0	0	2	7	2,177	410
1-146	4	0	0	9	0	1,665	0
2-23L	0	0	0	0	0	0	1,010
2-23M	0	0	0	0	2	0	780
2-72C	5	0	1	6	8	2,500	6,500
2-72D	5	1	0	0	0	0	3,525
2-72F	0	0	1	4	7	2,500	0
2-72I	5	0	0	0	0	0	2,195
2-72J	0	0	0	1	2	0	2,880
2-74	0	0	0	0	4	0	0
2-77	0	2	0	0	0	0	0
2-78	0	2	0	0	0	0	0
2-81	4	2	0	5	34	5,420	0
2-82	5	2	0	25	23	2,230	0
2-83	2	2	0	2	0	0	0
2-84	16	0	3	40	14	22,530	0
2-85F	0	1	0	0	0	0	0
2-85G	0	0	0	0	4	0	0
2-86E	6	3	0	0	2	0	0
2-87	4	0	0	3	0	0	0
2-103	1	1	0	0	3	280	0
3-31	4	0	0	0	0	0	0
3-33	2	0	0	0	0	0	0
3-35	0	3	0	0	0	0	0
3-47	3	0	0	0	0	0	0
3-53	0	2	0	0	4	0	0
3-56	2	0	0	0	0	0	0
3-73	0	4	0	0	0	0	0
3-75	0	2	0	0	0	0	0
3-77A	0	2	0	0	0	0	0
3-110	1	3	0	0	1	0	0
3-114	9	0	0	0	0	0	0
3-118	1	0	0	0	0	0	0
3-120	1	0	0	0	0	0	0
3-152	0	1	0	0	0	0	0
3-156	1	2	0	0	6	0	1,300
3-157	1	0	0	0	2	0	0
3-162	0	1	0	0	2	500	2,250
5-21	0	0	0	0	0	130	651
5-31	1	1	0	0	1	0	0
5-33	3	0	0	0	2	0	2,430
5-34	2	0	0	0	0	0	1,040
5-35	2	0	0	0	0	0	0
5-42	0	0	0	0	0	0	640
5-43	0	0	0	8	0	0	5,920
11-17	0	0	0	0	1	0	0
Total	101	38	5	105	130	40,732	32,491

wilderness area. Locating future corridors to avoid other WSAs originally identified as potentially conflicting would add little or no additional length or cost to facilities constructed within the corridors. The Alvord WSA (OR-2-74F) originally presented a substantial obstacle to two proposed corridors, a north-south corridor and another east-west corridor. However, a portion of the WSA which was deleted through the inventory amendment process included these areas of concern, thus reducing the scope of the wilderness/utility corridor issue.

Future corridor needs for high voltage electric transmission lines are somewhat speculative. Major variables include: uncertain growth of regional electric demand, variable projections of surplus hydroelectric generation from the Columbia River dams and other Northwest generating facilities, opportunities to upgrade carrying capacity of existing lines, parallel line installation within existing corridors, and potential new line locations entirely outside of Oregon.

Wood Products Harvest

Commercial Timber Products

Seven WSAs contain a total of 3,892 acres of commercial forest land having a total volume of 46,565 Mbf (thousand board feet). The major commercial species are Douglas fir, ponderosa pine and true firs (e.g. white, grand).

Prior to the wilderness review process, all but two of the WSAs (Homestead (OR-6-2) and Soda Mountain (OR-11-17)) had a partial harvest for salvage purposes. An estimated 2,118 acres are currently designated unavailable for harvest because of inaccessibility or to protect other values, while the remaining 1,774 acres provide an estimated average annual timber yield of 265 Mbf. An additional average annual yield of 11 Mbf is harvested on a salvage basis from lands that are currently unavailable for BLM's annual programmed timber harvest.

Table 3-10 shows the amount of commercial forest land and potential and current yield for the seven WSAs.

Minor Forest Products

Although juniper is found in many of the WSAs, only in three is it considered suitable for production of firewood, posts and poles. An estimated 9,680 acres in Four Craters Lava Bed (OR-1-22), Fish Creek Rim (OR-1-117) and Badlands (OR-5-21) WSAs are accessible and close enough to population centers to be managed for this type of production. Production from these WSAs ranges between 2 to 3 cords per acre, and products are sold on a request basis.

Sale and removal of minor forest products occurred in the Badlands WSA prior to the wilderness review process.

Cultural and Paleontological Resources

Special surveys to identify resources or sensitivity areas within the WSAs were not necessary for this EIS since wilderness decisions are not expected to significantly affect cultural resources. However, as part of its planning efforts over the past several years, BLM has commissioned cultural resources overviews for each district in Oregon. These overviews offer an introduction to the broad patterns of prehistory and history in central and eastern Oregon (Boreson, *et al.*, 1979, Bright, n.d., Gehr, *et al.*, 1978, Toepel, *et al.*, 1978 and 1979). Two other more general, and more easily accessible, sources of information about the prehistoric past of Oregon are Aikens (1984) and Cressman (1977).

There is very little specific information available about the cultural resource base of the Oregon WSAs. For the most part, lack of information reflects absence of

Table 3-10. Commercial Forest Land (CFL) and Yield by WSA

WSA No. (OR-)	WSA Name	Total Area and Volume		Potential Annual Timber Yield (Mbf)	Current Available CFL Acres	Current Annual Timber Yield (Mbf)
		Acres	Mbf			
1-101	Abert Rim	600	3,000	47	0	0
2-14	Malheur River-Bluebucket Creek	47	165	3	22	1
2-103	Aldrich Mountain	1,082	13,000	76	1,082	76
3-18	Castle Rock	236	1,900	40	0	0
5-31	North Fork	1,257	8,000	103	0	11 [1]
6-2	Homestead	330	7,500	33	330	33
11-17	Soda Mountain	340	13,000	155	340	155
	Totals	3,892	46,565	457	1,774	276

[1] This annual yield represents salvage harvest only and is not part of BLM's annual programmed timber harvest from currently available CFL.

inventories and research, not necessarily the absence of cultural resources in the WSA. Currently unrecorded sites almost certainly outnumber the known ones. Prehistoric and/or historic sites or values are known to exist in approximately one-third of the WSAs. This knowledge was gained as a result of occasional discoveries, cultural resources surveys which happened to cover portions of what are now WSAs, and from the previously mentioned cultural resource overviews of the BLM planning areas containing WSAs.

Five WSAs are known to contain paleontological sites (Sand Dunes, OR-1-24; Diablo Mountain, OR-1-58; Orejana Canyon, OR-1-78; Guano Creek, OR-1-132; and Dry Creek Buttes, OR-3-56). The potential for identifying new fossil sites is related to the geology of the WSAs. New discoveries are possible in areas where sedimentary rocks are exposed in escarpments and canyons, but unlikely in the vast areas covered by basalt.

Most cultural resource sites in central and eastern Oregon are surface sites and have been disturbed to some extent by erosion, livestock trampling, and illegal collecting. The relatively rare protected sites, such as rock shelters, have generally been vandalized to some extent. Cultural resource and paleontological sites may also have been disturbed by off-road vehicle use, mining, and range developments. Road construction has often damaged cultural resource sites and roads provide access to sites for collectors; however, for the most part, these two factors are not problems in the WSAs. In general, therefore, cultural resources in the WSAs are probably in somewhat better condition than those elsewhere.

Recreation Use

Table 3-11 indicates relative annual use levels for various primary recreation activities for each WSA. Primary recreation activities are hunting, fishing, whitewater rafting, off-road vehicle play, rockhounding, day hiking, backpacking, horseback riding, and cave exploration. Related uses which occur in conjunction with these primary recreation pursuits include camping, sightseeing, photography and nature study.

Deer hunting occurs in all areas where hunting is identified as a primary recreation activity. Antelope, upland game (chukar, quail) and small game are routinely hunted in most areas with adequate populations. Other species that may be hunted in an area (elk, bighorn sheep, bear, waterfowl) are noted under "Remarks" in Table 3-11.

Fishing occurs in most areas where trout populations exist. Table 3-11 also notes other types of fishing.

Current recreation use of the WSAs is predominantly motor-vehicle oriented, except where terrain restricts vehicle use. Typically vehicles are utilized on existing ways and trails to gain access to hunting, fishing and other areas of specific recreation use.

Overall, primitive recreation use of the WSAs is low. Primitive recreation activities (e.g., whitewater rafting, day hiking, backpacking and horseback riding), although gaining in popularity, are significant in only a few WSAs (primarily those associated with the John Day and Owyhee Rivers, the Desert Trail, and Steens Mountain.) A primary limiting factor to primitive recreation activities is the availability of water. As is the case in most arid and semi-arid environments, the only available water is seasonal runoff in shallow intermittent drainages, reservoirs, and springs. Virtually all available water requires treatment prior to drinking.

Economic Value and Local Income

Measures of economic conditions in the base year 1981 in the local economic areas containing WSAs are shown in table 3-12. The WSAs are generally located in the less populous regions of the state. The population of the counties containing WSAs is about 16 percent of the total state population. Personal income per capita is below the state average in all of the areas except the Lower John Day area, and unemployment rates are higher in all except Jefferson and Malheur counties and the Lower John Day area. The basic industries in these areas are agriculture and forest production. The depressed condition of the forest industry accounts for a large part of the high unemployment in these areas.

Resource outputs of an economic nature from the public lands in the WSAs include: livestock grazing, recreation, wood products, fish, and mineral production. This economic analysis focuses mainly on the economic value of these outputs and the local personal income generated by them as the primary measures of economic conditions.

Economic value measures the contribution of the resource outputs to net national production; the significance of these resource outputs to local economies is represented by the local personal income generated by the outputs. Addendum 1 contains a more detailed discussion of economic value and local personal income, as used in this analysis.

Table 3-11. Primary Recreation Activities and Use Levels in the WSAs [1]

WSA No. (OR-)	WSA Name	Hunting	Fishing	Whitewater Rafting	ORV Play	Rockhounding	Day Hiking/Backpacking	Horseback Riding	Cave Exploration	Other	Remarks, Other Activities
1-2	Devils Garden Lava Bed	L				M			M		Spelunking (lava tubes)
1-3	Squaw Ridge Lava Bed	L				L	L		L		
1-22	Four Craters Lava Bed	L					L				
1-24	Sand Dunes				H		L				Sand dune ORV activities
1-58	Diabo Mountain	L			L	L					
1-78	Orejana Rim	L									
1-101	Abert Rim	M					L			L	Bighorn sheep hunting; hang gliding
1-117	Fish Creek Rim	M									
1-132	Guano Creek	L					L				
1-139	Spaulding	H	H								Reservoir fishing
1-146	Hawk Mountain	L				L					
2-14	Malheur R. Bluebucket Cr.	L	L								Elk hunting
2-23L	Stonehouse	M									
2-23M	Lower Stonehouse	M									
2-77	Mahogany Ridge	M	M				L				
2-78	Red Mountain	M									
2-81	Pueblo Mountains	M	L				L				
2-82	Rincon										
2-83	Alvord Peak										
2-84	Basque Hills	L									
2-85F	High Steens	H	H				M	L			Bighorn sheep, elk hunting; highly scenic canyon and gorges
2-85G	Donner & Blitzen R.	H	M				L	L			
2-85H	Home Creek	L	L								
2-86E	Blitzen River	H	H				H				Waterfowl hunting, native trout fishing
2-86F	Little Blitzen Gorge	M	M				M				Highly scenic gorge; native trout fishing
2-87	Bridge Creek	L	L								
2-72C	Sheepshead Mtns.	L									
2-72D	Wildcat Canyon	L					L				
2-72F	Heath Lake	L									
2-72I	Table Mountain	M									
2-72J	West Peak	L									
2-73A	East Alvord	L									
2-73H	Winter Range	L									
2-74	Alvord Desert									M	Sightseeing/photography of views outside of area (Steens Mountain)
3-18	Castle Rock	M									Elk hunting
3-27	Beaver Dam Creek	M									Elk hunting
3-31	Camp Creek	M									
3-32	Cottonwood Creek	M									
3-33	Gold Creek	M	M								Reservoir trout fishing
3-35	Sperry Creek	M									
3-47	Cedar Mountain	M									
3-53	Dry Creek	L	L								
3-56	Dry Creek Buttes	L					L				Hiking from adjacent Owyhee Reservoir
3-59	Owyhee Breaks	L	L	M			L				Rec. activities related primarily to whitewater rafting
3-73	Blue Canyon	L									
3-75	Slocum Creek	L					L				Bighorn sheep hunting
3-77A	Honeycombs	L					L				Bighorn sheep; highly scenic geologic area
3-77B	Wild Horse Basin	M									
3-110	Lower Owyhee Canyon	L	L	M			L				See OR-3-59
3-111	Saddle Butte	L							M		Spelunking (lava tubes)

3-114	Palomino Hills	L									
3-118	Bowden Hills	L									
3-120	Clarks Butte	L							L		Spelunking (lava tubes)
3-128	Jordan Craters	L	L						L		Lava formation exploration
3-152	Willow Creek	M	M				L	L			
3-153	Disaster Peak	M	L								
3-156	Fifteenmile Creek	M	L				L				
3-157	Oregon Canyon	M									
3-162	Twelvemile Creek	M	L								
3-173	Upper W. Ltl. Owyhee	M	L				L				
5-1	Thirtymile	L	L	M							Rec. activities related primarily to whitewater rafting; waterfowl hunting; salmon, steelhead, bass fishing
5-6	Lower John Day	L	L	M							See OR-5-1
5-8	North Pole Ridge	L	L	M							See OR-5-1
5-9	Spring Basin	M				L					
5-21	Badlands	M			M		L	L		L	Random and organized ORV use; shooting
5-31	North Fork	H	M		L		L	L			Elk hunting
5-33	South Fork	M	M			L	L				
5-34	Sand Hollow	M					L				
5-35	Gerry Mountain	M					L				
5-42	Hampton Butte	M					L				
5-43	Cougar Well	M					L	L			
6-2	Homestead	M				L	L	L			Elk hunting; some recreation use associated with adjacent Hells Canyon NRA.
6-3	Sheep Mountain	H				L	L				Elk hunting
11-17	Soda Mountain	H	L		L	L	M	M			Bear hunting
12-8	N. Sisters Rocks										Marine fishing; rock climbing
12-14	Zwagg Island		L				L				See OR-12-8

Recreation use levels are indicated by: L-Low, M-Moderate, and H-High

Table 3-12. Economic Conditions, State and Affected Local Economic Areas, 1981

	Population	Percent of State Total	Personal Income		Total Employment	County Expenditures (millions)
			Total (millions)	Per Capita		
State of Oregon	2,660,735	100.0	$26,666.0	$10,022	1,205,000	$687.78
Total Affected Local Economic Areas	434,675	16.3	3,813.8	81,049	179,215	128.56
Central Oregon	88,800	3.3	774.5	8,721	37,530	21.28
Crook	13,200	0.5	115.6	8,758	4,900	3.99
Deschutes	63,650	2.4	549.0	8,625	27,550	14.01
Jefferson	11,950	0.4	109.9	9,197	5,080	3.28
Lower John Day	5,675	0.2	58.4	10,291	2,345	3.47
Gilliam	2,025	0.1	22.7	11,210	810	0.92
Sherman	2,225	0.1	20.8	9,348	995	1.31
Wheeler	1,425	0.1	14.9	10,456	540	1.24
Grant County	8,150	0.3	73.2	8,982	3,210	4.81
Baker County	16,300	0.6	144.7	8,877	6,710	4.36
Malheur County	27,225	1.0	234.2	8,602	11,510	4.52
Harney County	8,000	0.3	71.4	8,925	2,910	5.05
Lake County	7,600	0.3	69.8	9,184	3,260	6.78
Jackson-Klamath	192,325	7.2	1,686.6	8,770	80,780	48.02
Jackson	133,700	5.0	1,159.4	8,672	56,860	29.28
Klamath	58,625	2.2	527.2	8,993	23,920	18.74
Coos-Curry	80,600	3.0	701.0	8,697	30,960	30.27
Coos	63,300	2.4	544.5	8,602	24,620	15.28
Curry	17,300	0.7	156.5	9,046	6,340	14.99

Table 3-13 shows the economic value and local personal income generated annually by the resource outputs of the 77 WSAs under existing conditions.

Estimates of existing conditions are based on the year 1981 except where changes since then have made the data for that year unrepresentative. It should be noted that amounts reported as unknown are not reflected in the totals so the summary figures may be understated.

As shown in table 3-13, the annual economic value of existing outputs of the WSAs is over $1.6 million, and the local personal income generated by these activities amounts to over $2 million. In addition to omitting recreation activities which occur in unknown amounts in the WSAs, the totals omit the unknown amounts of mining activity occurring in the South Fork (OR-5-33) and Aldrich Mountain (OR-2-103) WSAs. The total of local personal income generated does not include amounts from certain activities (indicated in the table).

Existing outputs which yield revenues to the federal government include grazing, $358,857 (at $2.36 per AUM); timber sales, $27,059; and mineral leases, $462,565; all totaling $848,481. Four percent of timber sales, 12 1/2 percent of the grazing fees in most cases and 50 percent of mineral leasing revenues are distributed to county governments. These distributions total $235,684, covering about 0.25 percent of the counties' expenditures.

Social Conditions

One of the realities of virtually any land use decision is that some people benefit and some people lose. In BLM's land use planning, the situation can often be characterized in terms of national (or regional) benefits/local losses or local benefits/national (or regional) losses.

Table 3-13. Economic Value and Local Personal Income Generated Annually, Existing Program, All WSAs (1981 price levels)

Resource Output	Unit of Measure	Quantity	Economic Value	Local Personal Income Generated
Grazing	AUM	152,058	$1,143,274	$1,854,067
Temporary Forage	AUM	287	2,164	2,947
Recreation (incl. hunting)	RVD	Unknown	Unknown	Unknown
Timber	MBF	283	27,059	32,080
Firewood	$	150	375	Unknown
Oil & gas leases	Acres	412,866	412,866	124,387
Geothermal leases	Acres	27,268	49,699	14,967
Total			1,635,437	2,028,448

Concerning the wilderness issue in eastern Oregon, the local population tends to be opposed to wilderness designations, in apparent anticipation of losses of traditional use and access to the land, with no offsetting benefits. The constituency supporting wilderness designation tends to be regional and national, with people perceiving benefits from wilderness with no significant offsetting "costs." There are, of course, some local supporters of wilderness designation and some regional and national opponents.

The social aspects of economic conditions include people's relative dependence on the economic activities directly affected by BLM's wilderness decisions and the distribution of economic benefits or losses throughout the area. The Economic Value and Local Income sections of the EIS identify economic values and local personal income in general terms. A social perspective considers the scale of economic changes (gains and losses) within the affected environment and whether the economic changes are distributed equitably among the affected population.

An area of concern related to the potential impacts of wilderness designation involves the use and management of lands within (inholdings) and adjacent to wilderness areas. Adjacent lands may be owned or managed by private parties, the state, other federal agencies or, in most cases, by BLM. Inholdings may be privately owned or managed by the state.

Chapter 4

Environmental Consequences

John Day River in North Pole Ridge WSA (OR-5-8)

Introduction

This chapter analyzes the cumulative environmental consequences of each of the statewide alternatives including the proposed action. These environmental consequences (impacts) are compared to the affected environment, as described in Chapter 3. If a resource is not affected or if the impacts are considered insignificant, no discussion is included. Analysis, including the scoping process, indicates that there would be no significant impact upon air quality, energy use, climate and topography. Impacts on individual WSAs are discussed in the appendices.

Where data is limited, this analysis infers environmental consequences using knowledge of the area and professional judgement, based on observation and analysis of conditions and responses in similar areas.

Assumptions and Analysis Guidelines

The following assumptions and guidelines were used to develop the analyses in the EIS.

Funding: BLM will have the funding and work force to implement the proposed action with the possible exception of adequate funds to police boundaries to completely prevent trespass by motor vehicles.

Wilderness Uses: The Wilderness Management Policy served as the basis for determining how wilderness uses and other permissible uses, such as livestock grazing, will be managed in designated areas.

Mining and Mineral Leasing: The Wilderness Act withdrew wilderness areas from the general mining and mineral leasing laws on January I, I984. Therefore, legislation designating wilderness areas on BLM lands in Oregon would close the areas to location of mining claims and issuance of mineral leases at the time of designation. It would be possible to locate mining claims until that time in the study areas, and valid claims located by that time could be developed even if the development would impair wilderness values.

Mineral leasing in WSAs was prohibited by the 1984 Appropriations Act for the Department of the Interior and related agencies, but it is possible that leasing may be allowed in WSAs in the future. If leasing did resume in WSAs, however, the leases would stipulate that no actions which would impair wilderness values would be allowed. Therefore, the only leases where wilderness impairing activities could occur would be leases which were issued prior to passage of the 1976 Federal Land Policy and Management Act (FLPMA). Because of the 'nonimpairment' stipulation in existing post-FLPMA leases, it is assumed, for purposes of analysis, that such leases would be voluntarily terminated or allowed to expire if the areas covered by these leases were designated wilderness.

Range Projects: The following guidelines are used to analyze the extent to which wilderness designation would restrict or preclude development of potential range management projects proposed in land use plans. The guidelines are based on BLM's Wilderness Management Policy.

1. Non-structural rangeland projects such as seedings and brush control (vegetative manipulation) could be developed in a wilderness area only where they were part of the management practiced at the time the wilderness was established and where continuing these practices is necessary to maintain livestock grazing operations. Therefore, new seeding or brush control projects proposed in land use plans to increase livestock forage production could not be developed in a wilderness area. The increase in forage production which would be foregone if a study area were designated wilderness and the proposed range developments could not be developed is considered an opportunity cost attributable to wilderness designation.

2. New structural rangeland projects such as fences and waterholes could be constructed in a WSA or designated wilderness if they are needed to protect and effectively manage rangeland and/or wilderness resources, rather than to accommodate increased numbers of livestock. If they meet this criterion, the projects could be installed either before or after an area was designated wilderness. Some of the structural rangeland projects proposed in land use plans may meet this criterion and others may not. Which of the proposed structural projects could be built in a WSA or designated wilderness would not be decided until after site-specific environmental assessments (EAs) were prepared. Thus, the analyses in the Statewide EIS and appendices consider a range of opportunities foregone. The range extends from (a) no structural developments being precluded, with no consequent opportunity costs to (b) all structural developments being precluded, with all the consequent opportunity costs associated with the foregone opportunities for increased livestock forage production.

Motorized Vehicles: Although motorized vehicles and equipment normally are not allowed in wilderness, the Wilderness Management Policy allows some exceptions. One of these exceptions is to allow the use of motorized vehicles and equipment by livestock operators where there are no practical alternatives for maintenance of rangeland projects and management of livestock. Because of the variety of projects located in the study areas and the considerable variation in the frequency and type of maintenance required, it was not practical in the EIS analyses to identify which projects could and could not be maintained with the use of motor vehicles and equipment. It appears that in some cases there would be no practical alternative to the use of motorized equipment and vehicles for project maintenance.

The EIS analyses do include estimates of the possible costs of using horses instead of motorized vehicles to manage livestock (e.g., to check on and move livestock and to distribute salt). Whether an operator would be allowed to use vehicles to manage livestock would not be decided until after the area was designated wilderness. Therefore, the analyses of the effect of wilderness designation on the operators' livestock management costs encompass the range of possible outcomes. The range extends from no restrictions on the use of motor vehicles for livestock management to prohibiting any use of motor vehicles.

Acquisition of Inholdings: For purposes of analysis, it is assumed that state and private inholdings would not be acquired under the all wilderness alternative.

Short Term and Long Term: For purposes of analysis, short term is defined as the 10-year period following Congressional action (designation or release) on the WSAs. Long term is defined as the period beyond the initial 10-year period after Congressional action.

Impact Analysis

The following discussion and tables describe the significant impacts, by resource topic, of the proposed action and alternatives. The tables omit either the all wilderness or no wilderness/no action column when the alternative is not applicable to the impacts being described (e.g., impacts to wilderness values in nonsuitable areas under the all wilderness alternative, or impacts to other resources from wilderness management under the no wilderness/no action alternative).

Effects on Wilderness Values

Wilderness designation would preserve a wide variety of wilderness values. Remnants of the natural landscape in the high desert, on the margins of the Ochoco, Blue and Wallowa Mountains, on the Columbia Plateau, in the lower elevations of the Siskiyou Mountains, and on coastal islands would be maintained under the all wilderness alternative in a condition close to that which now exists. The other alternatives would preserve less of the natural landscape and add fewer areas to the National Wilderness Preservation System (NWPS) than would the all wilderness alternative.

Table 2-2 shows the acres of study area in which wilderness values would be preserved under each alternative.

One of the most important wilderness values which would be preserved by wilderness designation is the areas' naturalness. Although most of the areas are located in the least developed corner of the state, there is a potential for reduction of the areas' naturalness from various activities. These activities include those identified in existing plans and proposals or other activities, such as energy and mineral exploration and development and the construction of utility lines.

The management summary in table 2-3 indicates, in part, the potential for development of the WSAs under each of the alternatives.

Portions of areas designated wilderness would be restored to a more natural condition because vehicle traffic would be eliminated on most ways and sharply curtailed on the remainder. Although deeper ruts could remain for centuries, almost all tracks eventually would be obliterated by soil movement. Vegetation would return and gradually reclaim disturbances.

Table 4-1 shows the acres of land which would be restored to a more natural condition by the closure of ways under each alternative.

In addition to preserving the areas' naturalness, wilderness designation would preserve the outstanding opportunities for solitude and primitive recreation and the special biological and geological values described in Chapter 3. Most of the areas offer outstanding opportunities for solitude, so the extent to which each alternative would preserve those

Table 4-1. Acres on which Naturalness would be Enhanced by Way and Road Closures

Type of Vehicle Routes Closed	Acres Enhanced					
	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt.6 Com. Dvl.
Ways	982	827	394	404	356	101
Roads	0	619	249	267	267	19
Total	982	1,446	643	671	623	120

opportunities is approximately proportional to the acreage which would be designated wilderness under each alternative. The effect of each alternative on the preservation of opportunities for primitive types of recreation is described in the section on recreation use.

Table 4-2 shows the extent to which each alternative would ensure preservation of special wilderness features, such as biological, geological, cultural and paleontological features, through wilderness designation.

With respect to diversity in the NWPS, most of the WSAs in Oregon are located in the Intermountain Sagebrush Province, and all alternatives except the commodity development emphasis and no wilderness/no action alternatives would markedly increase the number of wilderness areas in that province.

Two of the ecosystems in the study areas are not represented in the NWPS: alpine meadows and barren in the Intermountain Sagebrush Province and sagebrush steppe in the Palouse Grassland Province. All of the alternatives except commodity development emphasis and no wilderness/no action would recommend wilderness designation of a portion of at least one study area with an alpine meadows and barren ecosystem in the Intermountain Sagebrush Province. All of the alternatives except no wilderness/no action would recommend wilderness designation of a portion of at least one study area with the sagebrush steppe ecosystem in the Palouse Grassland Province.

Table 4-3 shows the number of areas with ecosystems (or "potential natural vegetation") identified in the Bailey-Küchler system which would

Table 4-2. Special Wilderness Features Included in Areas Recommended Suitable for Wilderness Designation

Special Features	Number of Areas [1]					
	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Geologic features						
Lava fields and related features	6	6	6	4	4	4
High fault-block scarps	14	11	11	10	10	3
Unusual erosional forms	10	9	6	6	6	2
Other geologic features [2]	25	22	18	17	16	6
Plants						
Uncommon plant communities or Diverse plant associations	22	21	18	18	16	5
Plants of special interest	34	31	24	24	20	6
Other botanical features [2]	18	15	13	15	13	3
Animals						
Northern bald eagle	15	11	9	10	7	4
Existing or potential bighorn sheep habitat	24	21	18	20	19	3
Crucial deer winter range	19	13	6	8	6	5
Sage grouse strutting grounds	7	4	2	2	2	2
Raptor concentrations and/or excellent raptor habitat	23	19	15	16	14	4
Kit fox	14	13	7	5	5	0
Other animals[2]	47	41	30	33	29	6
Cultural resources	19	16	14	14	13	3
Paleontological resources	4	4	3	4	3	2

[1] Adjacent WSAs with common special features are counted separately.

[2] When two different special features are located within one WSA, each special feature is counted separately. A complete list of these "other" features appears in the footnotes to table 3-2.

Table 4-3. Number of WSAs with Bailey-Kuchler Ecosystems Included in Areas Recommended Suitable for Wilderness Designation

Bailey-Kuchler Ecosystems Represented in BLM Wilderness Study Areas in Oregon	**Number of WSAs**					
	Alt. 1 All Wld.	**Alt. 2 Wld. Emp.**	**Alt. 3 Con. Res.**	**Alt. 4 Eco. Div.**	**Alt. 5 P.A.**	**Alt. 6 Com. Dvl.**
PROVINCE POTENTIAL NATURAL VEGETATION						
Intermountain Sagebrush						
Sagebrush Steppe	54	48	32	27	27	9
Sagebrush Steppe with Juniper	9	9	7	7	5	4
Saltbush-Greasewood	13	12	10	6	7	0
Alpine Meadows and Barren	3	3	3	1	1	0
Rocky Mountain Forest						
Wheatgrass-Bluegrass	2	2	2	2	1	1
Western Ponderosa Forest	2	2	0	2	0	0
Grand Fir-Douglas Fir Forest	1	1	1	1	0	0
Sagebrush Steppe	1	1	0	1	0	0
Palouse Grassland						
Sagebrush Steppe	3	3	3	3	3	1
Sagebrush Steppe with Juniper	1	1	1	1	0	0
Wheatgrass-Bluegrass	4	4	4	4	3	1
Sierran Forest						
Mixed Conifer Forest	1	1	0	1	0	0
Pacific Forest						
Cedar-Hemlock-Douglas Fir Forest	1	1	0	1	0	0
Spruce-Cedar-Hemlock	2	2	2	2	2	2

be added to the NWPS in the various ecological provinces under each of the alternatives.

Existing and potential wilderness areas administered by other agencies in Oregon have not been inventoried to identify which vegetative communities listed in the Oregon Natural Heritage Plan (ONHP) occur in the areas. Therefore, it is not possible to definitively identify which vegetative communities would be added to the NWPS for the first time under each alternative.

However, almost all of the existing wilderness areas in Oregon and adjacent states are in different ecological life zones than those in which the study areas are located. Furthermore, only a few study areas preliminarily recommended suitable for wilderness in adjacent states have vegetative communities similar to some of the communities in the Oregon study areas.

It appears, therefore, that under all but the commodity development emphasis and no wilderness/no action alternatives, most of the vegetative communities in the study areas would be represented in the NWPS for the first time. Approximately one-third of the vegetative communities in the study areas would not be represented in areas recommended for wilderness under the commodity development emphasis alternative.

Table 4-4 shows which ONHP vegetative communities would be represented in the NWPS under each of the alternatives.

Table 4-5 shows the acres of additional wilderness that would be designated within five hours' driving time of major population centers (standard metropolitan statistical areas) under each alternative.

All of the alternatives except the no wilderness/no action alternative would better balance the geographic distribution of wilderness in the NWPS because many of the new wilderness areas would be located in southeastern Oregon, an area which now contains little wilderness. The elevational distribution also would be better balanced because most of the new wilderness would be at lower elevations than existing wilderness. The lower elevation areas would be available for some types of recreational activities during different seasons than many of the high elevation areas already designated wilderness.

As indicated in table 2-3, all of the alternatives except the all wilderness (alternative 1) and no wilderness/no action (alternative 7) alternatives include at least one

Table 4-4. Oregon Natural Heritage Plan Vegetative Communities Included in Areas Recommended Suitable for Wilderness Designation (continued)

	(X Denotes Vegetative Community Included)					
Vegetative Communities Physiographic Province	Alt. 1 All Wld.	Alt. 2 Wld. Emph.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Indian ricegrass-needlegrass						
Basin and Range	X	X	X	X	X	X
Great Basin wilde rye						
Basin and Range	X	X	X	X	X	
High elevation fescue grassland						
Basin and Range	X	X	X	X	X	
Alpine communities on Steens Mountain including snow deflation communities and moderate snow cover communities						
Basin and Range	X	X	X	X	X	
Alpine communities on Steens Mountain including downslope snow accumulation areas and upper cirque communities						
Basin and Range	X	X	X	X	X	
Western juniper/big sagebrush/bluebunch wheatgrass						
Basin and Range	X	X	X	X	X	
Owhyee Uplands	X	X	X	X		
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Western juniper/big sagebrush/Idaho fescue						
Basin and Range	X	X	X	X	X	X
Western juniper/big sagebrush						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Western juniper/bluebunch wheatgrass						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Western juniper/rigid sagebrush/Sandberg's bluegrass						
Ochoco, Blue and Wallowa Mountains	X	X		X		
Western juniper/low sagebrush/Sandberg's bluegrass						
Basin and Range	X	X	X	X	X	X
Western juniper/Idaho fescue						
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Mountain mahogany in southern Basin and Range						
Basin and Range	X	X	X	X	X	X
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Mountain mahogany/bunchgrass						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Aspen groves						
Basin and Range	X	X	X	X	X	X
Black cottonwood riparian area						
Basin and Range	X	X	X	X	X	
Narrowleaf cottonwood and Mormon tea community complex						
Basin and Range	X	X	X	X	X	X
Low elevation riparian forest, with cottonwood, hawthorn, and alder						
Ochoco, Blue and Wallowa Mountains	X	X		X		
High elevation riparian forest, with birch, alder and dogwood						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Ponderosa pine savanna						
Basin and Range	X	X	X	X	X	
Ponderosa pine/bunchgrass communities in the Blue Mountains with separate areas of Idaho fescue and bluebunch wheatgrass						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Ponderosa pine/bitterbrush/Idaho fescue						
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Ponderosa pine-western juniper/big sagebrush						
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Douglas fir-ponderosa pine/pinegrass						
Ochoco, Blue and Wallowa Mountains	X	X	X	X		
Ponderosa pine/bitterbrush/bunchgrass						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X

Table 4-4. Oregon Natural Heritage Plan Vegetative Communities Included in Areas Recommended Suitable for Wilderness Designation

	(X Denotes Vegetative Community Included)					
Vegetative Communities **Physiographic Province**	**Alt. 1 All Wld.**	**Alt. 2 Wld. Emph.**	**Alt. 3 Con. Res.**	**Alt. 4 Eco. Div.**	**Alt. 5 P.A.**	**Alt. 6 Com. Dvl.**
Big sagebrush/bluebunch wheatgrass						
Basin and Range	X	X	X	X	X	X
Owyhee Uplands	X	X	X	X	X	X
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Big sagebrush/Idaho fescue						
Basin and Range	X	X	X	X	X	X
Owyhee Uplands	X	X	X	X	X	[1]
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Big sagebrush on Steens Mountain						
Basin and Range	X	X	X	X	X	
Big sagebrush-bitterbrush/Idaho fescue						
Basin and Range	X	X	X	X	X	X
Big sagebrush/bunchgrass community inside forest zone						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Big sagebrush-greasewood						
Basin and Range	X	X	X	X	X	
Big sagebrush-spiny hopsage						
Basin and Range	X	X	X	X	X	X
Low sagebrush/bluebunch wheatgrass						
Basin and Range	X	X	X	X	X	X
Owyhee Uplands	X	X	X	X	X	X
Low sagebrush/Idaho fescue						
Basin and Range	X	X	X	X	X	X
Owyhee Uplands	X	X	X	X	X	X
High Lava Plains and Columbia Basin	X	X	X	X	X	
Low sagebrush/Sandberg's bluegrass						
Basin and Range	X	X	X	X	X	X
Low sagebrush on Steens Mountain						
Basin and Range	X	X	X	X	X	
Low sagebrush/bunchgrass community inside forest zone						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Silver sage						
Basin and Range	X	X	X	X	X	X
Black sagebrush community complex						
Basin and Range	X	X	X	X	X	X
Rigid sagebrush/Sandberg's bluegrass community						
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Rigid sagebrush scabland						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Greasewood-saltgrass						
Basin and Range	X	X	X	X	X	
Shadscale-spiny hopsage-budsage						
Basin and Range	X	X	X	X	X	X
Winterfat						
Basin and Range	X	X	X	X	X	X
Alkaline vegetation mosaic with representative communities, including greasewood, shadscale, saltgrass and spiny hopsage types						
Owyhee Uplands	X	X	X	X	X	[1]
Bitterbrush/bunchgrass						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Bitterbrush-sagebrush/snowberry on Steens or Trout Creek Mountains						
Basin and Range	X	X	X	X	X	
Snowbrush and bittercherry community complex						
Basin and Range	X	X	X	X	X	
Bluebunch wheatgrass/Sandberg's bluegrass						
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Bluebunch wheatgrass-Idaho fescue and Sandberg's bluegrass complex						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	
Idaho fescue-bluebunch wheatgrass						
High Lava Plains and Columbia Basin	X	X	X	X	X	X

Table 4-4. Oregon Natural Heritage Plan Vegetative Communities Included in Areas Recommended Suitable for Wilderness Designation (continued)

	(X Denotes Vegetative Community Included)					
Vegetative Communities Physiographic Province	Alt. 1 All Wld.	Alt. 2 Wld. Emph.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Ponderosa pine/big sagebrush						
High Lava Plains and Columbia Basin	X	X	X	X	X	X
Ponderosa pine-Douglas fir forest in the eastern Siskiyous						
Siskiyou Mountains	X	X		X		
Douglas fir/mallow ninebark						
Ochoco, Blue and Wallowa Mountains	X	X	X	X	X	X
Douglas fir/ponderosa pine/elk sedge						
Ochoco, Blue and Wallowa Mountains	X	X	X	X		
Sanddune series (beachridges), from active unrevegetative dunes through completely stabilized (with greasewood, hopsage, Indian ricegrass, and wild rye)						
Basin and Range	X	X	X	X	X	
Dunes and shifting sand						
High Lava Plains and Columbia Basin	X	X		X		
Bare playa and playa margin						
Basin and Range	X	X	X	X	X	X
Playa and associated greasewood flats						
High Lava Plains and Columbia Basin	X	X		X		

[1] These communities are included in preferred alternative for WSA OR-3-195, Owyhee Canyon, which was analyzed in the Owyhee Canyonlands EIS. Also included in that WSA is the big sagebrush Great Basin wildrye community of the Owyhee Uplands Province.

of three management actions intended to enhance the protection provided by wilderness designation:

1. Closure of some of the primitive BLM roads between adjacent study areas and some of the dead-end roads extending into study areas would enhance the areas' naturalness and opportunities for solitude and primitive recreation. As the former roads were reclaimed by the weathering of berms and ruts and by revegetation, the land in and immediately adjacent to the former roads would return to a more natural condition. Table 4-1 shows the acres of land which would be restored to a more natural condition by the closure of roads under alternatives 2 through 6. In addition, the naturalness of areas from which the roads could be seen would be enhanced. The elimination of vehicle traffic on the closed routes also would enhance opportunities for solitude and primitive recreation.

2. Acquisition of inholdings in areas designated wilderness would enhance the areas' naturalness, solitude and primitive recreation by eliminating existing activities such as the use of motor vehicles on some inholdings.

Table 2-3 shows the acres of acquired inholdings in which wilderness values would be preserved under each alternative.

3. In a few cases small acreages of public land adjacent to the study areas would also be recommended as suitable for wilderness, thereby better protecting wilderness values in the study areas. Alternatives 2 through 5 include such recommendations.

All of the alternatives except the all wilderness alternative recommend some areas nonsuitable for wilderness. For most of these lands, management for uses other than wilderness would not significantly affect wilderness values in the short term. Over the long term, however, a variety of developments (e.g., grazing developments, mines, geothermal and oil and gas developments, powerlines, and timber harvest) could significantly reduce wilderness values.

In the areas not designated wilderness there would be fewer requirements to locate and build range developments -- such as fences, livestock water reservoirs, spring developments, and water pipelines -- so they are substantially unnoticeable or to design grazing systems to produce more natural vegetative communities.

The new structural developments would directly reduce the areas' naturalness in three ways: (1) the naturalness of the area disturbed during construction of the developments would be reduced until the

Table 4-5. Acres Recommended Suitable for Wilderness Within Five Hours' Drive of Population Centers [1] [2]

	Acres Recommended Suitable					
Population Centers Within Five Hours' Drive of the WSAs	**Alt. 1 All Wld.**	**Alt. 2 Wld. Emp.**	**Alt. 3 Con. Res.**	**Alt.4 Eco. Div.**	**Alt.5 P.A.**	**Alt.6 Com. Dvl.**
Oregon						
Eugene-Springfield	396,452	350,635	226,376	270,002	213,664	105,350
Medford	665,466	587,502	295,002	307,457	275,302	168,130
Portland	251,239	215,225	140,813	170,223	128,101	90,547
Salem	359,162	323,148	188,296	217,538	175,416	81,722
Washington						
Kennewick-Richland-Pasco	263,106	213,397	132,960	148,320	108,223	47,729
Tacoma-Everett-Seattle	33,139	28,512	23,665	28,512	28,512	15,470
Yakima	149,544	125,619	90,033	99,875	73,751	36,197
Idaho						
Boise	1,925,142	1,611,242	890,657	791,352	725,247	245,780
Nevada						
Reno	569,625	518,460	197,165	189,725	189,725	97,250
California						
Redding	300,923	265,403	168,353	166,323	160,913	78,253

[1] Population centers are Standard Metropolitan Statistical Areas (SMSAs) with population over 100,000.

[2] A standard 200-mile radius was used to approximate a five hour drive.

disturbed sites revegetated; (2) the naturalness of the site occupied by the developments would be permanently reduced; and (3) livestock would trample and heavily graze vegetation around new water developments. Virtually all vegetation would be removed immediately adjacent to the developments, and the vegetative composition of a 5- to 15-acre area around the developments would be changed. The proportion of grasses would decrease, and the proportion of shrubs and herbaceous plants would increase.

Table 4-6 shows the acres on which naturalness would be directly reduced by these developments in areas recommended as nonsuitable for wilderness under each alternative.

In addition to the land physically occupied or changed by the new developments, the naturalness of land from which the new developments could be seen would be adversely affected. The amount of land affected in this manner would vary with the size and type of development and the nature of the surrounding terrain and vegetation. The extent of the area which would be affected in this manner cannot be estimated because the location of most of the proposed developments has not been determined. However, the amount of land affected would vary among the alternatives approximately in proportion to the acres occupied by the developments.

Livestock management activities around new developments in the areas recommended nonsuitable for wilderness would reduce opportunities for solitude and primitive recreation, and concentrations of livestock would adversely affect opportunities for primitive recreation. The effects would vary among the alternatives approximately in proportion to the number of new water developments installed in the areas recommended as nonsuitable for wilderness.

Projects which increase livestock forage by physically changing the vegetative communities (vegetative manipulation projects) would adversely affect the naturalness of areas recommended as nonsuitable for wilderness under all of the alternatives except the all wilderness alternative.

Where brush was removed with prescribed fire and the area managed to increase native grasses, the initial effect on wilderness values would be slight. The initial effects would be similar to those of wildfire, and wildfire is a natural part of the wilderness ecosystem. In some cases, a firebreak might be built by removing vegetation with a bulldozer. In such cases the naturalness of the area would be reduced in the vicinity of the break. Prescribed fires generally use existing firebreaks such as roads or barren areas and avoid construction of new breaks.

A more far-reaching effect on wilderness values

Table 4-6. Acres Directly Affected by Proposed Activities in Areas Recommended Nonsuitable for Wilderness Designation

	Acres Directly Affected					
Proposed Activities	**Alt. 2 Wld. Emp.**	**Alt. 3 Con. Res.**	**Alt. 4 Eco. Div.**	**Alt. 5 P.A.**	**Alt. 6 Com. Dvl.**	**Alt. 7 No. Wld.**
Structural Livestock Developments	168	2,293	2,249	2,313	2,831	3,155
Vegetative Manipulation Projects for Livestock	5,356	48,156	49,568	49,848	70,598	73,223
Structural Wildlife Developments	1	61	63	63	64	65
Vegetative Manipulation Projects for Wildlife	7,110	8,310	23,060	23,060	26,500	27,945
Timber Harvest	330	1,752	0	1,752	1,752	1,774
Harvest of Firewood, Posts and Poles	7,040	9,080	8,160	8,160	8,760	9,680
Total	20,005	69,652	83,100	85,196	110,505	115,842

would be the repetition of the burning to maintain grazing levels by preventing sagebrush reinvasion. Some of the sites probably would be burned more often than would be the case if only wildfires occurred, and this repeated burning would interrupt natural ecological processes.

Where brush was removed and the area planted to crested wheatgrass, the introduction of this non-native species would affect ecological processes and apparent naturalness. The drilled rows of grass and sharp contrast between the seeding and surrounding native vegetation would be highly visible evidence of works of man. Although native plants sometimes slowly return to the seedings, the areas essentially remain monocultures--ecosystems with far fewer elements than existed on the sites before the seeding.

Where juniper was cut to increase livestock forage, ecological processes would be disrupted, and the stumps would reduce the area's apparent naturalness. If crested wheatgrass were planted in areas cleared of juniper, the effects would be similar to those described in the previous paragraph.

Table 4-6 shows the acres of vegetative manipulation projects which would occur in areas recommended as nonsuitable for wilderness under each alternative -- and thus shows the acres of land on which naturalness would be adversely affected in a direct manner. In addition, naturalness would be reduced on surrounding lands from which the projects could be seen.

Current land use plans include proposals that could or would lead to increased livestock grazing in 44 WSAs. In some WSAs, the grazing increases would be made possible because of the construction of range developments or the implementation of brush or juniper control projects. In several WSAs, more livestock forage would be made available because of the implementation of improved grazing systems. In 13 other WSAs, more forage is available now than is allocated to livestock or other purposes (that is, no new projects or grazing systems would be needed to make the forage available to livestock), and current land use plans propose to allocate at least part of the forage to livestock.

In areas designated wilderness, livestock grazing would be increased only if it could be done without impairing wilderness values. In areas not designated wilderness, increases in livestock grazing would be regulated to prevent undue or unnecessary degradation of other resources, but there would be no specific constraints to prevent impairment of wilderness values. Increasing livestock grazing up to the full potential identified in the land use plans and grazing EISs probably would cause some change in the vegetative composition of the range in some WSAs. Although the changes might not affect the appearance of portions of the WSAs, ecological processes would be affected, particularly around water sources, where the size of the trampled and heavily grazed areas would increase.

This more intensive use could adversely affect special wilderness features such as fish and wildlife habitat. The increased numbers of livestock would also affect opportunities for primitive recreation, and the increased management activities which would accompany the increased grazing would reduce opportunities for solitude and primitive recreation. Any effects of increased grazing on wilderness values would vary among the alternatives approximately in proportion to the extent of the increases proposed in the areas recommended as nonsuitable for wilderness. Many of the potential (contingent upon projects or improved grazing systems) and proposed grazing increases have been calculated only for entire pastures; not specifically for the portions of pastures inside WSAs. Potential and proposed grazing increases in pastures affecting the nonsuitable portions of WSAs total approximately 4,100 AUMs under alternative 2, 20,800 AUMs under alternative 3, 25,100 AUMs under alternative 4, 25,300 AUMs under alternative 5, 54,000 AUMs under alternative 6, and 60,800 AUMs under alternative 7. The proposed and potential increases actually within the nonsuitable portions of WSAs in each alternative would be less, but roughly proportional to the above figures.

Some wildlife projects proposed in wilderness study areas could enhance wilderness values, particularly those which would restore populations of wildlife species which had been adversely affected by man's activities. Examples are guzzlers to provide water for bighorn sheep reintroduced to former habitat and stream structures intended to restore habitat of Whitehorse cutthroat trout and redband trout. However, any individual project would also have the potential for adversely affecting wilderness values, and in areas not designated wilderness there would be no requirement that the projects be located or designed to maximize beneficial effects and minimize adverse effects on wilderness values.

Some projects would cause populations to exceed natural levels, an effect which would detract from wilderness values. The naturalness of the project sites would be reduced, and the naturalness of the area disturbed during construction would be temporarily impaired. Table 4-6 identifies the acres of land on which naturalness would be directly affected in the long term in areas recommended as nonsuitable for wilderness under each alternative. In addition, the naturalness of areas from which the projects could be seen would be adversely affected.

Table 4-6 also lists the acres of vegetative manipulation projects proposed to improve wildlife habitat in areas recommended as nonsuitable for wilderness under each alternative. The introduction of non-native plant species in some vegetative manipulation projects would reduce the naturalness of the project sites.

Table 4-6 also shows the number of acres proposed for timber and firewood harvest in areas recommended as nonsuitable for wilderness under each alternative. Timber harvest would substantially reduce the naturalness of the affected areas. Firewood harvest would affect naturalness to a lesser extent. Recreationists and other public land users would travel on routes developed in the harvest areas and this traffic would continue to reduce opportunities for solitude and primitive recreation after the timber and firewood had been harvested.

Wilderness values would be adversely affected by mineral exploration and development in some of the areas not designated wilderness. Mineral exploration and development would most likely occur in areas with moderate or high mineral potential. Mine shafts, tailings, buildings, and roads would impair the naturalness and disrupt the ecosystems of the immediate area and reduce the naturalness of lands from which the developments could be seen. Traffic on the access roads and activity at the mines would reduce opportunities for solitude and primitive recreation in the immediate vicinity.

Exploration for and development of oil and gas and geothermal resources could adversely affect wilderness values in some areas not designated wilderness. Wells, collecting pipelines, powerplants, powerlines, and related facilities would eliminate the natural aspect of the area around the developments, and activity in the developed areas would virtually eliminate opportunities for solitude and primitive recreation in those areas.

Table 4-7 shows the acres of land recommended as nonsuitable for wilderness under each alternative that have moderate or high mineral and energy resource potential (and thus a higher probability for exploration and development).

If powerlines were built in proposed utility corridors, the towers, conductors, and access roads would detract from the naturalness of land in the corridors and in the area from which the facilities could be seen. Traffic on the access roads would reduce opportunities for solitude and primitive recreation in the area. Recreationists and other public land users would use access roads after the powerlines were constructed, so vehicle traffic would continue to reduce opportunities for solitude and primitive recreation long after the construction was completed.

Table 4-8 shows the miles of utility corridors proposed across areas recommended as nonsuitable for wilderness under each alternative. Map 7 shows the locations of the proposed corridors.

In summary, wilderness designation of the WSAs would increase diversity in the NWPS, maintain wilderness values in a condition close to that which now exists, and enhance some wilderness values through restoration of former vehicle routes, acquisition of some inholdings, and designation of small areas of adjacent public lands. In the absence of wilderness designation, specific land use proposals

Table 4-7. Acres of Moderate or High Energy and Mineral Potential in Areas Recommended Nonsuitable for Wilderness Designation

	Acres Rated Moderate or High					
	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.	Alt. 7 No Wld.
Metals						
Beryllium	0	0	0	0	15,010	15,010
Chromium	0	9,395	0	9,395	9,395	9,395
Copper	16,886	320,491	239,465	283,756	342,506	436,406
Gold	124,930	476,683	435,986	480,277	718,767	847,357
Lead	0	2,160	0	2,160	2,160	2,160
Lithium	48,290	74,180	73,380	75,695	206,095	206,095
Manganese	0	0	0	0	0	1,662
Mercury	74,472	440,467	397,507	437,792	658,030	0
Molybdenum	12,882	103,760	57,814	119,192	155,762	175,162
Silver	113,453	284,671	242,013	279,983	509,923	632,373
Tin	7,600	7,600	7,600	7,600	7,600	7,600
Zinc	1,670	4,720	3,920	6,235	9,655	34,455
Evaporites						
Boron	0	25,240	25,240	25,240	25,240	25,240
Potassium	0	25,240	25,240	25,240	25,240	25,240
Sodium	0	25,240	25,240	25,240	25,240	25,240
Energy						
Geothermal	156,810	295,087	293,767	309,767	568,722	728,459
Oil & Gas	171,592	551,407	624,189	693,766	1,034,473	1,136,363
Uranium	18,117	20,043	18,397	18,397	40,584	40,584
Thorium	206	2,132	486	486	16,918	16,918
Non-Metals						
Aggregates	0	5,410	0	5,410	5,410	5,418
Asbestos	0	9,395	0	9,395	9,395	9,395
Bentonite	110,637	195,387	229,987	230,947	331,047	390,307
Diatomite	29,834	218,573	215,751	228,681	273,441	311,113
Fluorite	0	24,960	24,960	24,960	62,580	62,580
Limestone	0	52,760	52,760	52,760	52,760	68,120
Optical Calcite	61,980	106,720	106,720	106,720	129,660	129,660
Perlite	22,400	44,600	44,600	44,600	103,840	103,840
Pumice	7,600	7,600	7,600	7,600	7,600	7,600
Sand & Gravel	320	320	320	320	320	3,010
Semi-Precious Stones	1,920	1,920	1,800	2,300	2,300	2,300
Slab Lava	0	710	710	710	710	4,710
Zeolites	121,347	190,987	190,787	191,747	360,487	419,147

Table 4-8. Miles of Potential Utility Corridors Within Areas Recommended Nonsuitable for Wilderness Designation

		Miles of Utility Corridors						
WSA No. (OR-)	WSA Name	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt.4 Eco. Div.	Alt.5 P.A.	Alt.6 Com. Dvl.	Alt. 7 No Wld.
2-84	Basque Hills	0	0	16.5	16.5	16.5	16.5	16.5
3-47	Cedar Mountain	0	0	6.0	0	6.0	6.0	6.0
3-110	Lower Owyhee Canyon	0	0	0	0	0	4.5	4.5
3-111	Saddle Butte	0	16.5	16.5	16.5	16.5	12.5	12.5
3-118	Bowden Hills	0	7.5	7.5	7.5	7.5	7.5	7.5
3-120	Clarks Butte	0	2.0	2.0	2.0	2.0	2.0	2.0
	Totals	0	26.0	48.5	42.5	48.5	49.0	49.0

which could impair one or more elements of wilderness value (e.g., livestock and wildlife projects, grazing increases, and timber harvest) would be implemented. In addition, potentially impairing activities would be allowed in areas where there are now no firm proposals, but moderate to high resource potentials indicate a probability for development (e.g., mineral and utility line development).

Table 4-6 shows the total acres on which proposed developments and activities would directly affect wilderness values in areas recommended nonsuitable for wilderness dèsignation under each alternative. The total acres affected, both directly and indirectly, by specific proposals and by potential activities in areas with moderate to high conflicting resource values would be greater than those depicted in table 4-6 and would similarly increase from alternative 1 to alternative 7.

Effects on Energy and Mineral Development

If designated wilderness, areas with energy and mineral potential, would no longer be available for exploration or production, except on mining claims having a valid discovery at the time of designation and on existing leases. This impact of unavailability is of particular concern for minerals currently on the Strategic and Critical Materials Stockpile List. Many of these minerals are rare in this country, and we depend on foreign sources for the supply.

On the date Congress designates a WSA as wilderness, only those mining claimants who can demonstrate a valid discovery as of that date are allowed to continue work. Mining claims with valid existing rights could be mined under an operating plan filed with BLM, and those operations would be subject to the environmental and wilderness protection controls as defined in the BLM Wilderness Management Policy. After mining, the claimants would be responsible for surface restoration. If a claimant applies for patent to a claim where valuable minerals have been discovered, only the mineral estate would be conveyed.

Existing oil and gas and geothermal leases could be developed according to the terms of the lease. Those leases issued after the enactment of FLPMA (October 21, 1976) include stipulations to protect wilderness values.

Table 4-9 shows, by alternative, the acres of land withdrawn by wilderness designation that have high mineral potential and that have been nominated as Areas of Critical Mineral Potential (ACMPs). The table lists only the minerals for which the ACMPs were nominated.

Tables 4-10 and 4-11 show the acres of public lands in the WSAs rated with high and moderate potential for mineral occurrence that would be withdrawn from new mineral location and leasing through wilderness designation. Strategic and critical minerals are indicated by an asterisk.

Addendum 2 discusses mineral supply and commodities information and provides an indication of the significance of minerals likely to be found in Oregon WSAs, with respect to scarcity, use, and future demands.

All alternatives except the commodity development emphasis and no wilderness/no action alternatives would recommend withdrawal of substantial acreages of land with high potential for metals and energy resources. All but the no wilderness/no action alternative would recommend withdrawal of substantial acreages of land with moderate potential for these resources. For several of these resources, the nation is significantly dependent on imports to meet domestic needs.

Affected much less by the alternatives are lands with high potential for the more widely available non-metals and evaporates although all alternatives except no wilderness/no action would recommend withdrawal of substantial acreages of land with moderate potential for occurrence of some non-metals.

In conclusion, wilderness withdrawal could affect the domestic mineral supply, particularly with regard to those commodities in such short supply that the U.S. relies heavily on imports. The impact of mineral withdrawal could be most significant for minerals that rarely occur in this country. Also lost would be opportunities to discover mineral deposits on these lands in the future to meet growing needs of the region and the nation. All alternatives except commodity development emphasis and no wilderness/no action would risk important impact on long-term domestic availability of minerals in short supply (i.e., base and precious metals, geothermal resources, and oil and gas).

Effects on Water Quality

Primarily as a result of land use constraints associated with wilderness designation, water quality would improve under all alternatives except commodity development emphasis and no wilderness/no action, under which water quality is expected to remain about the same.

Effects on Vegetation

The most substantial effects of wilderness designation or nondesignation on vegetation are related to changes that may occur in livestock grazing management, use and control of fire, timber management in a few WSAs, and rangeland seeding. Minor impacts, primarily under nonwilderness

Table 4-9. Acres of High Mineral Potential in Nominated ACMPs that would be Withdrawn by Wilderness Designation

Mineral Commodity	Acres Withdrawn Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Oil & Gas	86,122	80,316	40,531	35,446	24,701	0
Gold & Mercury	18,500	23,019	8,561	8,561	8,561	0

Table 4-10. Acres of High Mineral Potential Withdrawn by Wilderness Designation

Mineral Commodity	Acres Withdrawn Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Metals:						
Copper [1]	132,946	115,950	57,445	61,511	55,190	0
Gold	143,010	115,950	57,445	61,511	55,190	0
Mercury [1]	126,625	113,695	55,190	55,190	55,190	0
Molybdenum	111,970	99,040	55,190	55,190	55,190	0
Silver [1]	122,034	99,040	55,190	55,190	55,190	0
Energy:						
Geothermal	84,658	44,232	19,010	19,010	19,010	0
Oil & Gas	86,122	79,002	40,342	35,257	24,512	0
Non-Metals:						
Bentonite	2,000	760	760	0	0	0
Cinders	480	480	440	440	440	440
Limestone	1,440	1,440	1,390	1,390	1,390	0
Optical Calcite	40,000	27,900	0	0	0	0
Semi-Precious Stones	1,800	0	0	0	0	0
Slab Lava	600	600	470	470	470	470
Zeolites	540	0	0	0	0	0

[1] Mineral is on the strategic and critical materials stockpile list.

management, would include localized temporary or permanent losses of vegetation from mineral exploration and development, livestock reservoir construction, and development of access.

Structural range improvements would not be allowed in wilderness areas unless needed to protect and effectively manage rangeland and/or wilderness resources. Thus, vegetative resources would generally benefit from wilderness management constraints on development of rangeland improvements.

Fencing within areas designated wilderness would be allowed if necessary for resource protection. Fencing to protect riparian areas is proposed in some WSAs and such fencing would lead to substantial improvement in the vegetative condition of the riparian areas. Thus, riparian vegetation would improve in designated wilderness.

Fire could be introduced by prescription, or wildfire allowed to burn under control in accordance with prescription, both within (under Wilderness Management Policy guidelines) and outside designated wilderness. The frequency of fire applications may not be the same in wilderness areas as in other areas because of varying objectives. For example, in some areas not designated wilderness, fire may be excluded for longer periods to permit the ecosystem to evolve toward a specific successional stage, or to maintain it in a certain stage as long as possible. In other instances fire may be applied periodically to maintain a successional stage that maximizes productivity of perennial grasses.

Fire management under wilderness guidelines, however, emphasizes the natural role of fire in wilderness ecology. Therefore, vegetation would most

Table 4-11. Acres of Moderate Mineral Potential Withdrawn by Wilderness Designation

	Acres Withdrawn					
Mineral Commodity	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Metals:						
Beryllium	15,010	15,010	15,010	15,010	15,010	0
Chromium[1]	9,395	9,395	0	9,395	0	0
Copper[1]	303,460	303,570	58,470	135,430	97,460	93,900
Gold	704,347	606,477	313,219	349,860	311,890	128,590
Lead[1]	2,160	2,160	0	2,160	0	0
Lithium	206,095	157,805	131,915	132,715	130,400	0
Manganese[1]	1,662	1,662	1,662	1,662	1,662	1,662
Mercury[1]	712,515	650,973	343,483	386,443	346,158	181,110
Molybdenum	63,192	63,242	16,212	62,185	20,780	19,400
Silver[1]	510,339	419,880	292,512	335,170	297,200	122,450
Tin[1]	7,600	0	0	0	0	0
Zinc[1]	34,455	32,785	29,735	30,535	28,220	24,800
Evaporites:						
Boron	25,240	25,240	0	0	0	0
Potassium	25,240	25,240	0	0	0	0
Sodium	25,240	25,240	0	0	0	0
Energy:						
Geothermal	643,801	527,417	414,362	415,682	399,682	159,737
Oil & Gas	1,050,241	885,769	544,614	476,917	418,085	101,890
Uranium	40,584	22,467	20,541	22,187	22,187	0
Thorium	16,918	16,712	14,786	16,432	16,432	0
Non-Metals:						
Aggregates	5,418	5,418	8	5,418	8	8
Asbestos [1]	9,395	9,395	0	9,395	0	0
Bentonite	388,307	278,910	194,160	160,320	159,360	59,260
Diatomite	311,113	281,279	92,540	95,362	82,432	37,672
Fluorite [1]	62,580	62,580	37,620	37,620	37,620	0
Limestone	66,680	66,680	13,970	13,970	13,970	0
Optical-Calcite	89,660	39,780	22,940	22,940	22,940	0
Perlite	103,840	81,440	59,240	59,240	59,240	0
Pumice	7,600	0	0	0	0	0
Sand & Gravel	3,010	2,690	2,690	2,690	2,690	2,690
Semi-Precious Stones	500	380	380	500	0	0
Slab Lava	4,110	4,110	3,530	3,530	3,530	3,530
Zeolites	418,607	297,800	228,160	228,360	227,400	58,660

[1] Mineral is on the strategic and critical materials stockpile list.

likely follow a natural succession in wilderness areas with respect to fire management. However, overriding fire guidance in wilderness and outside wilderness areas allows control of all fires to prevent loss of human life, property, and threat to outside resources.

Under all alternatives except all wilderness and ecosystem diversity emphasis, there probably would be vegetative change from timber harvest in one or more (depending on the alternative) of the following WSAs: Malheur River-Bluebucket Creek (OR-2-14), Aldrich Mountain (OR-2-103), Homestead (OR-6-2), and Soda Mountains (OR-11-17). Depending on the alternative, vegetation could be changed on as much as 1,774 acres of available commercial forest land. Of these WSAs, timber harvest in all but Malheur River-Bluebucket Creek would involve old growth timber.

Vegetative manipulation projects (i.e., brush and juniper control, prescribed burning, and seeding) for wildlife habitat improvement and livestock grazing management have been proposed within many WSAs. All but one of these projects would be precluded under wilderness management, thus resulting in no change to vegetative resources. If it is determined that the proposed juniper cutting project in the Badlands WSA (OR-5-21) meets the Wilderness Management Policy criteria implementation of the project would physically change the vegetative community in the area.

The proposed vegetative manipulation projects would be implemented in the absence of wilderness designation. Without wilderness management constraints, the potential for impacts to vegetative resources would be greater.

Table 4-6 shows the acres of vegetation change expected as a result of brush control, juniper control, prescribed burning and seeding in the areas recommended as nonsuitable for wilderness under each of the alternatives.

Since no federally listed threatened or endangered plants are known to exist in the WSAs, none of the alternatives are expected to affect them. There are in some of the study areas, however, a number of plants of special interest --federal candidate species (categories 1 and 2) and plants on lists 1 and 2 of the Oregon Natural Heritage Plan's (ONHP) "Rare, Threatened, and Endangered Plants and Animals of Oregon" (see Affected Environment, Wilderness Values, Special Features). Both within and outside wilderness, the federal candidate species would receive the same protection as federally listed threatened or endangered species. As such, none of the alternatives are expected to affect them. The ONHP species of special interest, though, would not be formally protected in the absence of wilderness designation and thus would be subject to disturbance in proportion to the acreage of surface disturbing activities proposed under each alternative. However, some of the ONHP species could be designated as BLM sensitive species and, as such, would receive the same protection as the federal candidate species.

In conclusion, in the absence of the wilderness management constraints on most surface disturbing activities, vegetative change would be expected to increase with the amount of acreage not designated as wilderness, thus increasing from alternative 1 to alternative 7. For developments and activities proposed in areas recommended as nonsuitable for wilderness designation, the acres of expected vegetative change in each alternative would be the totals depicted in table 4-6.

Effects on Wildlife

Impacts on existing wildlife resources from wilderness designation or nondesignation relate to the level of mining, vegetative manipulation, timber harvest, and other resource activities allowed and, to a lesser extent, the level of wildlife management actions authorized.

Wilderness management would preclude alteration of wildlife habitat by mining operations, except on existing valid claims. Stricter regulation of existing mining activities in wilderness areas, through mitigation measures where practical and feasible, would minimize adverse impacts to wildlife habitat.

Under alternatives with nonsuitable recommendations, sagebrush and juniper control in conjunction with range seedings would benefit antelope, but would reduce habitat diversity in some locations with subsequent adverse effects on local populations of nongame species. In addition, proposed livestock water developments, with subsequent increases in cattle use and related trampling, would alter localized habitats and displace associated nongame species.

Under alternatives 3, 5, 6 and 7, timber management activities would occur in three WSAs (Aldrich Mountain, OR-2-103; Homestead, OR-6-2; and Soda Mountain, OR-11-17), with generally adverse effects on most wildlife populations (especially deer, elk, and most birds). Harvest of old growth timber in these WSAs would cause displacement and localized losses of populations of species that are dependent upon old growth for habitat, such as the pileated woodpecker. Similar activities in the Homestead WSA would occur under alternative 2. Timber harvest activities and their consequences, but not harvest of old growth timber, would also occur in the Malheur River-Bluebucket Creek WSA (OR-2-14) under alternative 7. The anticipated annual salvage harvest of dying and diseased trees in the North Fork WSA (OR-5-31) under alternatives 3, 5, 6 and 7 would not significantly affect wildlife.

Wilderness management aimed at preserving the naturalness of the area would preclude or make more costly development of some wildlife and livestock water and seeding improvements. These constraints could result in foregone opportunities to expand wildlife populations, since proposed projects, especially water developments, aid wildlife distribution into previously unused arid areas.

Some proposed wildlife projects, especially those serving to reverse the affects of man by reintroducing displaced species to their native ranges, would likely be allowed in wilderness as fulfilling a wilderness management goal regarding maintenance of wildlife species in a natural balance with their habitat and with each other.

Wilderness designation and related potential constraints on project development and vehicle use could affect efforts to increase bighorn sheep populations in existing ranges and efforts to reintroduce them to historical ranges. However, since bighorn sheep are largely intolerant of development and human activity, the benefits of wilderness management on existing populations would far outweigh the effects of minor constraints on bighorn sheep management.

Vehicle restrictions from wilderness designation, especially under the alternatives proposing the largest acreages for wilderness (all wilderness and wilderness emphasis), could result in increased hunting and fishing pressures on adjacent areas. These pressures could have adverse effects on certain game and fish populations in these areas. However, enforcement of current game and fish regulations would preclude significant adverse affects from these activities.

Trout pool developments proposed in existing BLM plans probably would be permissible in designated wilderness areas if constructed with natural materials, such as rock and logs, as proposed. Limited vehicular access would likely reduce the amount of fishing pressure, especially on the more remote stream areas. Overall, though, fisheries enhancement projects would likely be unaffected by the alternatives.

Wilderness designation might not have any direct effect on the riparian habitat within the study areas, because livestock grazing might not be affected. Exceptions to this could be those study areas (primarily in BLM's Vale District) which have a surplus of forage and potential for an increase in livestock use. However, any grazing increases in these areas would be allowed only if they would not adversely affect wilderness values; so riparian habitat would generally be unaffected by grazing increases under wilderness management.

Current BLM plans call for additional fencing to protect some riparian areas from livestock grazing. In areas designated wilderness, these plans would be evaluated on a site-specific basis to determine if the fencing could be constructed without adversely affecting wilderness values. It is likely that riparian area improvement would be allowed as an enhancement of overall wilderness values.

Wilderness designation would not result in any significant change to raptor habitat due to the rugged nature of the terrain where they nest. In addition very little impact upon threatened or endangered wildlife species is foreseen under any of the alternatives, primarily because of the protection afforded by existing laws and regulations.

In summary, wilderness designation would preclude or make more costly development of some wildlife habitat improvements, and consequently some opportunities to expand bighorn sheep, antelope and deer populations would be foregone. Designation would have very little impact on chukar and raptors, as well as threatened or endangered species. Without wilderness designation, however, adverse impacts to existing wildlife resources could occur as a result of mining, vegetative manipulation, intensive grazing development, timber harvest, and other resource development activities. As shown in table 2-3, the potential for occurrence of such activities increases with the amount of acreage recommended nonsuitable under each alternative. The degree of impact on wildlife resources would increase proportionately with the level of increased activity.

Effects on Livestock Grazing

Wilderness designation could constrain development of livestock improvements and maintenance of grazing management systems. Wilderness designation would limit the number, kind, and location of proposed livestock improvements, and such constraints could reduce the grazing systems' capacity to improve range condition and productivity.

Wilderness management would not allow vegetative manipulation (brush control and seeding, brush control by burning or other means for release of native grass species, and juniper control) if it was not practiced in that area prior to wilderness designation and if it is for the sole benefit of livestock grazing.

Proposed structural livestock improvements, including fences, reservoirs and waterholes, springs, wells, and pipelines, might or might not be allowed in areas designated as wilderness, depending upon a site-specific assessment of whether they conform with Wilderness Management Policy. Wilderness policy allows construction of new livestock improvements if needed for resource protection (rangeland and/or wilderness) and the effective management of these resources, rather than to accommodate increased numbers of livestock.

Table 4-12 lists proposed livestock improvements which could be precluded by wilderness designation under each of the alternatives.

In addition to the potential AUMs of livestock forage associated with proposed improvement projects, there are 35,121 AUMs of available but unallocated forage in 13 WSAs which might or might not be allocated to livestock, depending on whether this increased use would have an adverse effect on wilderness quality.

Table 4-13 shows the maximum livestock forage foregone in each WSA. The amount under each alternative represents the maximum number of AUMs of additional livestock forage that could be foregone if none of the proposed range improvements could be developed and none of the available but unallocated forage could be allocated to livestock. It is likely the demand will exist for this increased forage production since the demand in the Pacific Northwest is expected to increase by about 50 percent (over 1976 levels) by the year 2000.

The proposed livestock projects and allocations of surplus forage are considered to be the most cost

Table 4-12. Proposed Range Improvements which could be Precluded by Wilderness Designation

	Number, Miles or Acres of Projects Precluded					
Range Improvements	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
Reservoirs & Waterholes (number)	95	86	40	44	39	11
Springs (number)	37	30	10	14	12	2
Storage Tanks	4	4	1	1	1	1
Wells (number)	4	4	0	0	0	0
Pipelines (miles)	90	88	11	11	11	11
Fence (miles)	113	111	31	26	22	1
Vegetative Manipulation Including Seeding (acres) [1]	40,732	39,207	5,847	4,845	4,565	1,665
Vegetative Manipulation Without Seeding (acres) [1]	28,531	28,666	19,220	18,810	18,810	960

[1] With one exception, the vegetative manipulation projects proposed in the WSAs would be precluded by wilderness designation, since they do not meet the wilderness management requirement that vegetation manipulation practices for livestock must have been established prior to wilderness designation. The only exception involves proposed juniper control in the Badlands WSA (OR-5-21).

effective means of increasing forage allocations. Alternative sources for additional forage (in lieu of that foregone under each alternative) are sometimes not practical to obtain and, in some cases, not available to the livestock operators. Alternative sources on other public lands would be more costly or less cost effective, while in some areas, no alternative sources exist. Alternative sources would be most limited in Southern Harney and Malheur counties under all but the commodity development emphasis and no wilderness/no action alternatives. None of the nearby private lands that are currently unutilized are considered suitable for grazing.

BLM Wilderness Management Policy allows livestock use within wilderness to remain at or near the level occurring at the time of designation. In order to maintain this level of use within the wilderness area, the level of use in adjacent undesignated areas may also have to be maintained at or near the level occurring at the time of wilderness designation. This is because additional livestock allowed into areas immediately adjacent to the wilderness boundary may drift into the wilderness area. Fencing of wilderness boundaries usually is not considered a viable alternative because it would disrupt grazing system efficiency by creating water and livestock distribution problems, awkward pasture sizes and shapes, and additional maintenance problems.

Under wilderness designation, ways would be closed to use of vehicles by livestock operators unless there were no practical alternative to vehicle use. These closures would result in additional time and cost to the livestock operator. The number of ways actually utilized by grazing operators is not known; but for purposes of analysis, the total miles of ways closed under each alternative can provide some indication of the potential effects on livestock operators' access needs. Table 2-3 shows miles of ways which would be closed under each alternative. The Economic Value and Local Income section discusses the economic cost of way and proposed road closures, combined, based on estimates of routes actually utilized by grazing operators.

In those WSAs where, historically, water has been hauled in for livestock and there are no alternative sources of water, the practice could continue. The occasional use of motor vehicles to maintain existing livestock improvements, where no other means are practical, would also be allowed in wilderness. Thus, impacts to livestock water hauling and maintenance of existing improvements would be minor.

In summary, as a grandfathered right in wilderness areas, livestock grazing at current levels would not be significantly affected by wilderness designation under any of the alternatives. However, some proposed increases in livestock numbers, some development of new range improvements, and implementation of all new vegetative manipulation projects would be precluded under wilderness management. The greatest limitations on more intensive grazing management would occur under the alternatives proposing the largest wilderness acreages.

Table 4-13. Maximum AUMs Licensed Livestock Forage Foregone in Allotments

	Maximum AUMs Foregone					
WSA No. (OR-)	Alt. 1 All Wld.	Alt. 2 Wld Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P. A.	Alt. 6 Com. Dvl.
1-117	164	164	81	81	81	0
1-139	776	539	539	0	0	0
1-146	880	880	880	880	880	880
2-23L	205	0	0	0	0	0
2-23M	400	250	250	0	0	0
2-72C	3,965[3]	3,965[3]	3,965[3]	3,965[3]	3,965[3]	0
2-72D	3,085[3]	3,085[3]	3,085[3]	3,085[3]	3,085[3]	0
2-72F	1,200	1,200	0	0	0	0
2-72I	1,150	1,150	1,150	1,150	1,150	0
2-72J	700	700	0	0	0	0
2-74	7,659	7,659	7,659	7,659	7,659	0
2-77	180	180	0	0	0	0
2-78	200	200	0	0	0	0
2-81	160	167	14	14	14	0
2-82	2,955[1]	2,955[1]	1,207[1]	1,207[1]	1,207[1]	1,207[1]
2-83	915	915	0	0	0	0
2-84	8,615	8,615	0	0	0	0
2-85F	208	0	0	0	0	0
2-85G	1,950	1,950	0	0	0	0
2-86E	1,737	1,737	150	500	500	500
2-87	1,470	0	0	0	0	0
2-103	179	179	0	179	0	0
3-31	200	200	100	100	100	0
3-33	100	100	0	0	0	0
3-35	60	60	0	0	0	0
3-47	150	200	0	150	0	0
3-53	40	40	0	0	0	0
3-56	100	0	0	0	0	0
3-73	80	0	0	0	0	0
3-75	40	0	0	0	0	0
3-77A	40	40	40	40	40	0
3-110	13,575[3]	13,575[3]	13,575[3]	13,575[3]	13,575[3]	0
3-111	10,831[3]	10,831[3]	10,831[3]	0	0	0
3-114	4,870[3]	4,870[3]	0	0	0	0
3-118	2,004[3]	2,004[3]	2,004[3]	0	0	0
3-120	1,888[3]	998[3]	998[3]	0	0	0
3-128	1,164[3]	1,164[3]	1,164[3]	1,164[3]	1,164[3]	1,164[3]
3-152	25	0	0	0	0	0
3-156	400[2]	400[2]	400[2]	400[2]	400[2]	0
3-157	215	0	0	0	0	0
3-162	575[2]	345[2]	345[2]	345[2]	345[2]	0
3-173	5,770	5,770	5,770	5,770	5,770	5,770
5-21	56	0	0	0	0	0
5-31	72	72	0	72	0	0
5-33	941	826	826	826	826	0
5-34	323	323	323	323	323	0
5-35	612	420	420	0	0	0
5-42	104	104	0	0	0	0
5-43	524	524	0	0	0	0
6-3	30	30	30	30	30	30
Total	67,317	63,161	41,566	37,537	37,136	8,436

[1] Includes 115 AUMs which might be foregone in Basque Hills WSA. Column totals do not double-count this figure.

[2] A proposed fence is common to two WSAs. Column totals do not double-count 120 AUMs associated with the fence.

[3] Proposed increases in pastures in more than one WSA are not double-counted in column totals.

AUM = Animal Unit Month

Effects on Utility Corridor Routing and Communication Facility Siting

(This analysis is limited to the direct effect of displacing potential utility corridor facilities outside of WSA boundaries. Proposals would be analyzed in detail when incorporated in firm right-of-way applications.)

Wilderness designation would preclude the creation or expansion of utility corridors and communication sites within wilderness boundaries. Existing communication sites within the Fish Creek Rim (OR-1-117) and Sheep Mountain (OR-6-3) WSAs would not be adversely affected by wilderness designation since Wilderness Management Policy provides for such preexisting use and maintenance.

The no wilderness/no action alternative would leave all WSAs open to application for utility corridor and facility site uses. All other alternatives, except the all wilderness and wilderness emphasis alternatives, place minor constraints on expansion of existing line facilities within corridors by forcing construction of parallel facilities to the opposite side of the existing rights-of-way from the WSA. Utility project proponents do not consider this a substantial impact.

Map 7 displays all of the existing and proposed utility corridors in or near the wilderness study areas.

The all wilderness alternative would not totally block the potential north-south or east-west utility corridors; however, it would require corridor routing through narrow slots or different route configurations such as north or south of the Guano Creek WSA (OR-1-132). These potential alternative routes have been reviewed by the utility industry and it was found that rerouting would not be a substantial impact, except for the rerouting necessary to avoid the Basque Hills (OR-2-84) and Saddle Butte (OR-3-111) WSAs.

Wilderness designation of the Basque Hills WSA, as proposed in the all wilderness and wilderness emphasis alternatives, would create an obstacle to the potential east-west utility corridor. This corridor could serve as a regional intertie as well as transmit power from coal-fired generating plants in Montana or Wyoming to the west coast. There are a variety of other options available to increase east-west transmission capacity including new corridors or additional lines in existing corridors to the north and south.

Designation of the Saddle Butte WSA, as proposed under the all wilderness alternative would create an obstacle to the potential north-south utility corridor through Malheur County. This corridor could serve as a major regional intertie which would facilitate the long-term sale and transmission of surplus Northwest power to California, sales of excess seasonal power, and alternative routing of power in the event of a line loss elsewhere. There are a wide variety of other options available for increasing north-south power transmission capability within existing corridors or for designating new north-south transmission corridors; however, the potential corridor through Malheur County is relatively straight and has other features desirable for from a regional power system.

The alternative corridor location around the Basque Hills WSA is estimated to be 4.4 miles longer than the corridor suggested by utility interests, which is the preferred route in BLM's land use plan. The alternative corridor location around the Saddle Butte WSA would be 9.3 miles longer than the utility interests' suggested corridor, which is also the preferred route in BLM's land use plan.

Both Pacific Power & Light (PP&L) and Bonneville Power Administration (BPA) have indicated interest in construction of 500-kV AC transmission lines in the potential east-west corridor while only BPA has expressed interest in the north-south corridor. Both proponents agree that the longer routes would involve higher costs associated with construction, maintenance, and line load energy loss.

Table 4-14 provides estimates of the increased construction costs as well as increased annual maintenance costs for AC and DC lines on the longer routes that would be required by the all wilderness alternative for both corridors and the wilderness emphasis alternative for the east-west corridor only.

The added cost of annual line load energy loss caused by internal resistance within the powerline itself is also indicated. This power loss can also be expressed in kilowatt hours. For example, the added energy loss for routing each 500-kV AC line around the Basque Hills WSA would be approximately 22 million kilowatt hours per year or enough power to supply 180 typical households in Oregon. The added energy loss for routing each 500-kV AC line around the Saddle Butte WSA would be approximately 47 million kilowatt hours or enough power to supply 380 typical households in Oregon. These estimates assume peak loadings of 1,000 megawatts (MW) and 70 percent load factors.

Table 4-14. Increased Costs of Alternative Utility Routing to Bypass Designated Wilderness

East-West Electric Transmission Corridor Option [1]

Costs of an added 4.4 miles to Bypass Basque Hills WSA under alternatives 1 and 2.

	1 Single Circuit 500-kV AC Line	1 Bi-Polar 500-kV DC Line
Construction Cost [2]	$1,671,120	$1,201,200
Annual Maintenance Cost [3]	3,872	1,540
Annual Energy Loss Cost [4]	61,600	125,400
Total Annual Cost	65,472	126,940

North-South Electric Transmission Corridor Option [1]
Costs of an added 9.3 miles to bypass Saddle Butte WSA under alternative 1.

	1 Single Circuit 500-kV AC Line	1 Bi-Polar 500-kV DC Line
Construction Cost [2]	$3,532,140	$2,538,900
Annual Maintenance Cost [3]	8,184	3,255
Annual Energy Loss Cost [4]	130,200	265,050
Total Annual Cost	138,384	268,305

[1] BPA March 1983 per mile cost data for preliminary transmission line estimates.

[2] Assumes flat terrain 500-kV lattice tower, single circuit AC at $379,800 per mile; and flat terrain, 500-kV bi-polar DC at $273,000 per mile.

[3] $880 per mile for AC, $350 per mile for DC.

[4] $14,000 per mile for AC; $28,500 per mile for DC. Energy loss estimates assume peak loadings of 1,000 megawatts (MW) for AC and 2,000 MW for DC lines and 70 percent load factors for both kinds of line.

Effects on Wood Products Harvest

Wilderness designation would have minor impacts on harvest of wood products in 10 WSAs. The designation of all other WSAs as wilderness areas would have no measurable impact on wood products harvest.

Commercial timber production would not be significantly affected over the short or long term by any of the alternatives.

Under the all wilderness alternative, the average annual timber yield foregone would be 276 Mbf (thousand board feet). Over the long term, designation under this alternative could preclude harvest of an additional average 181 Mbf (annually) should other areas in the WSAs become economically and/or technically feasible to harvest. The cumulative effects, however, would remain insignificant in light of the approximately 8,000,000 Mbf average annual timber yield (pre-recession) in Oregon.

Table 4-15 indicates the number of acres of available commercial forest land and annual timber yield which would be foregone under each alternative.

Availability of minor forest products would not be seriously affected by wilderness designation under any of the alternatives. Foregone opportunities for harvest would range from 9,680 acres under the all wilderness alternative to no acres under the no wilderness/no action alternative. Under the all wilderness alternative, the total loss of minor forest products would amount to an estimated 1.2 percent of the total production of such products from BLM woodlands in Oregon.

Table 4-16 shows losses of minor forest products in the affected WSAs.

Effects on Cultural and Paleontological Resources

Cultural resources are and would continue to be managed according to specific laws and regulations covering protection of archaeological and historical sites, regardless of wilderness designations. Routine cultural resource management practices (including inventories, data collection, design modifications and/or mitigation and monitoring of construction projects or other activities) would not be affected by wilderness designation.

Table 4-15. Short-Term Losses to Commercial Timber Production [1]

		Alt. 1 All Wld.		Alt. 2 Wld. Emp.		Alt. 3 Con. Res.		Alt. 4 Eco. Div.		Alt. 5 P.A.		Alt. 6 Com. Dvl.	
WSA No. (OR-)	WSA Name	Available CFL (Acres)	Annual Yield (Mbf)	Available CFL (Acres)	Annual Yield (Mbf)	Available CFL (Acres)	Annual Yield (Mbf)	Available CFL (Acres)	Annual Yield (Mbf)	Available CFL (Acres)	Annual Yield (Mbf)	Available CFL (Acres	Annual Yield (Mbf)
2-14M	Malheur River-Bluebucket Creek	22	1	22	1	22	1	22	1	22	1	22	1
2-103	Aldrich Mountain	1,082	76	1,082	76	0	0	1,082	76	0	0	0	0
5-31	North Fork [2]	0	11	0	11	0	0	0	11	0	0	0	0
6-2	Homestead	330	33	0	0	0	0	330	33	0	0	0	0
11-17	Soda Mountain	340	155	340	155	0	0	340	155	0	0	0	0
	Totals	1,774	276	1,444	243	22	1	1,774	276	22	1	22	1

[1] Although Abert Rim (OR-1-101) and Castle Rock (OR-3-18) WSAs contain commercial forest land (CFL), it is not currently available for timber production, so no short-term losses would occur under any alternative.

[2] The North Fork WSA (OR-5-31) does not contain CFL currently available for timber production, but produces an average yield of 11 Mbf through mortality salvage.

CFL = Commercial Forest Land

Mbf = Thousand Board Feet

Table 4-16. Losses of Minor Forest Products

		Acres Lost					
WSA No. (OR-)	WSA Name	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.
1-22	Four Craters Lava Bed	1,360	920	0	920	920	920
1-117	Fish Creek Rim	2,160	1,720	600	600	600	0
5-21	Badlands	6,160	0	0	0	0	0
	Totals	9,680	2,640	600	1,520	1,520	920

None of the alternatives is expected to have any significant impacts on known and unknown cultural resources within the WSAs. Also, none of the alternatives would cause any specific impacts on particular sites. The only potential impacts on cultural resources would be indirect, resulting from changes in land use under wilderness management.

Wilderness designation would have some moderately beneficial indirect impacts on cultural resources within the areas by reducing ground-disturbing activities. Eliminating motor vehicle use in wilderness areas would have a beneficial effect on cultural resources by reducing the potential for inadvertent destruction of sites, and by limiting access for illegal artifact collecting and vandalism. Decisions to not designate all or parts of the WSAs as wilderness would simply leave cultural resources susceptible to the various forms of deterioration by human and natural agents which prevail under any circumstances.

Effects on Recreation Use

Shifts in recreation use patterns would occur as a result of wilderness designation. Visitors seeking hiking, backpacking or other nonmotorized recreation experiences would focus their activities in areas designated as wilderness, while visitors seeking nonwilderness or more vehicle-oriented recreation experiences would be displaced to surrounding areas. (Exceptions to such vehicle use displacement include areas such as Sand Dunes, OR-1-24, and Spring Basin, OR-5-9 which provide regionally or locally unique vehicle-oriented recreation opportunities, in which case these opportunities would be foregone by wilderness designation rather than displaced .)

Displacement of vehicle-oriented hunting and fishing into surrounding areas, including privately owned lands, could result in greater pressure on certain game and fish populations and a subsequent modification of the recreation opportunities they provide. Wilderness designation would provide increased primitive recreation opportunities for visitors capable and willing to hike, backpack and pursue other recreation uses of the areas without motor vehicles.

Except for some specific areas with widely known primitive recreation opportunities (e.g., John Day and Owyhee Rivers, Desert Trail and Steens Mountain), primitive recreation use in the WSAs is generally low. Vehicle-oriented recreation use is more prevalent in the WSAs. There are a few WSAs where substantial ORV use is believed to be inhibiting primitive recreation to the extent that the exclusion of motorized use, through wilderness designation, would result in significant increases in primitive recreation use. In general, however, wilderness designation of the WSAs would have a greater adverse impact on net recreation use than would nondesignation.

Under any of the alternatives which would establish wilderness areas, development of access and recreation facilities, with the exception of riding and hiking trails, would occur outside or peripheral to wilderness areas. Development of any public use facilities would have to be consistent with Wilderness Management Policy.

Other resource use activities occurring in the absence of wilderness designation could affect recreation opportunities. Development of areas having commercial timber or the potential for energy resource or mineral extraction would involve access development, which would provide increased opportunities for vehicle-oriented recreation while reducing opportunities for solitude and primitive recreation.

Table 4-17 reflects anticipated net effects (increase, decrease, no change) in overall recreation visitor use, from each alternative. The baseline for analysis assumes that the historical upward trend in demand for both vehicle-oriented and primitive recreation opportunities would continue, and that any increase in recreation use from wilderness designation would be tied to outstanding or unusual recreation opportunities or unique location advantages.

There is no supporting evidence for increased primitive recreation use of wilderness areas resulting solely from their designation as wilderness. It is possible primitive recreation use could increase from wilderness designation and the attendant public attention it would draw. But since undeveloped high desert areas have gained popularity among some recreationists during the past several years, any general increase in primitive recreation use as a result of wilderness designation is expected to be a minor addition to primitive use increases anticipated under nondesignation.

As table 4-17 portrays, in the alternatives proposing wilderness designation of the majority of WSAs (the all wilderness and wilderness emphasis alternatives), those WSAs showing a net decrease in recreation visitor use outnumber those showing an increase. The greatest number of WSAs showing a decrease (36 percent showing a decrease versus 12 percent showing an increase) are under the wilderness emphasis alternative.

Effects on Economic Value and Local Income

Differences in the economic value of the resource outputs of the WSAs are the primary measures of the effects of the alternatives on the national economy, as explained in Chapter 3. The principal effects on the local economies involved are measured by the differences in local personal income resulting from differences in outputs under each alternative.

Under wilderness designation, livestock grazing would be allowed to continue, although planned increases might not be allowed. Restrictions on vehicle use would increase grazing operators' transportation costs. Investments (projects) involving vegetative manipulation would not generally be allowed, but other kinds of investments, such as structural projects, might be.

Timber harvest, firewood cutting and the sale of other forest materials would not be allowed under

Table 4-17. Net Effects of the Alternatives on Recreation Use in WSAs

	Number of WSAs Affected						
Changes in Net Recreation Use	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P. A.	Alt. 6 Com. Dvl.	Alt. 7 No Wld.
Increase	10	9	16	17	18	14	8
No Change	43	40	50	50	51	61	67
Decrease	24	28	11	10	8	2	2
Total	77	77	77	77	77	77	77

wilderness designation. Revenues from most existing geothermal and oil and gas leases would no longer be received by the federal government, resulting in lower revenues to state and local governments.

Table 4-18 shows the effects of the alternatives on

Table 4-18. Effects of Alternatives on Annual Economic Value (1981 price levels)

		Alt. 1 All. Wld.		Alt. 2 Wld.Emp.		Alt. 3 Con.Res		Alt. 4 Eco. Div.		Alt. 5 P. A.		Alt. 6 Com.Dvl.		Alt. 7 No Wld.
Item	Unit of Measure	From	To	From	To	From	To	From	To	From	To	From	To	
Changes in Resource Outputs														
Grazing:														
Adjustments [1]	AUM	-6,521	27,763	-6,448	27,756	-4,006	27,763	-410	27,763	-410	27,763	21,666	27,763	27,763
Management [2]	AUM	0	482	178	482	257	482	302	482	302	482	452	482	482
Investment [3]	AUM	50	20,109	3,955	21,760	23,029	29,777	23,437	30,236	23,838	30,316	30,412	32,439	32,879
Big game hunting [4]	RVD	3,224	4,169	3,380	4,169	5,969	6,342	4,381	4,729	5,994	6,342	6,185	6,380	6,380
Upland game hunting [4]	RVD	0	221	11	221	81	227	137	227	137	227	196	231	231
Waterfowl hunting [4]	RVD	0	1,098	0	1,098	129	1,098	0	1,098	129	1,098	671	1,098	1,098
Fishing [4]	RVD	0	4,762	16	4,762	323	4,762	323	4,762	323	4,762	383	4,762	4,762
Nongame wildlife [4]	RVD	0	75	0	75	20	75	30	75	30	75	45	75	75
Timber	MBF	-277	-277	-244	-244	-2	-2	-277	-277	-2	-2	-2	-2	0
Firewood	Cords	-150	-150	0	0	0	0	0	0	0	0	0	0	0
Oil & gas leases	Acres	-412,866	-412,866	-34,4021	-344,021	-211,753	-211,753	-213,341	-213,341	-189,569	-189,569	-30,340	-30,340	0
Geothermal	Acres	-26,628	-26,628	-16,088	-16,088	-9,238	-9,238	-9,238	-9,238	-9,238	-9,238	0	0	0
Value of Proposed Investments [5]														
Grazing	$	377	150,552	28,945	162,196	171,352	221,599	174,794	225,923	177,778	226,327	226,915	242,198	245,515
Big game hunting	$	73,194	93,257	76,733	93,257	134,611	142,565	98,574	105,964	135,175	142,565	139,064	143,472	143,472
Upland game hunting	$	0	6,321	345	6,321	2,075	6,509	3,787	6,509	3,787	6,509	5,634	6,635	6,635
Waterfowl hunting	$	0	29,740	0	29,740	3,358	29,740	0	29,740	3,358	29,740	17,748	29,740	29,740
Fishing	$	0	94,565	318	94,565	6,396	94,565	6,396	94,565	6,396	94,565	7,642	94,565	94,565
Nongame wildlife	$	0	2,718	0	2,718	725	2,718	1,087	2,718	1,087	2,718	1,630	2,718	2,718
Other	$	0	28,338	0	28,338	7,546	28,338	0	28,338	7,546	28,338	12,867	28,338	28,338
Total [6]	$	73,571	405,491	106,341	417,135	326,063	526,034	284,638	493,557	335,127	530,762	411,500	547,621	550,938
Investments [7]	$	2,577	130,320	18,805	137,324	175,557	231,340	179,564	230,644	185,648	232,029	228,744	251,556	258,481
Net Economic Value	$	54,638	275,849	71,347	280,489	137,344	295,372	98,120	263,591	143,317	299,411	180,031	269,743	293,135
Value of Other Expected Changes in Outputs														
Grazing:														
Adjustments	$	-49,168	207,237	-48,618	207,237	-30,205	207,237	-3,091	207,237	-3,091	207,237	163,362	207,237	207,237
Management	$	0	3,635	1,342	3,635	1,938	3,635	2,278	3,635	2,278	3,635	3,409	3,635	3,635
Timber	$	-26,805	-26,805	-24,990	-24,990	-56	-56	-26,805	-26,805	-56	-56	-56	-56	0
Firewood	$	-375	-375	0	0	0	0	0	0	0	0	0		0
Oil & gas leases	$	-412,866	-412,866	-344,021	-344,021	-211,753	-211,753	-213,341	-213,341	-189,569	-189,569	-30,340	-30,340	0
Geothermal	$	-48,419	-48,419	-29,224	-29,224	-16,074	-16,074	-16,074	-16,074	-16,074	-16,074	0	0	0
Reduced access [8]	$	-7,903	-7,903	-10,454	-10,454	-5,303	-5,303	4,882	-4,882	-4,745	-4,745	-1,263	-1,263	0
Total	$	-545,536	-283,400	-455,965	-195,721	-261,453	-20,218	-261,915	-48,134	-211,257	2,524	135,112	181,309	212,968
Value of Total Expected Changes in Outputs														
All categories[9]	$	-490,898 (-437,768)	-9,647 (34,407)	-384,618 (-330,901)	82,672 (125,986)	-124,109 (-60,411)	273,058 (329,590)	-163,795 (-103,101)	213,361 (268,861)	-67,940 (-7,560)	299,839 (355,788)	315,143 (375,523)	476,024 (632,686)	504,007 (564,580)

[1] Adjustments include use of currently available but unallocated livestock forage and possible reduction adjustments.

[2] Expected future increases due to improved management that is not dependent on investments.

[3] Expected future increases due to range improvement investments.

[4] Expected future increases from proposed wildlife and livestock projects.

[5] Vegetative manipulation projects involving up to $1,774,190 total expenditures, and structural projects involving up to $1,934,430. Amounts shown in the table represent combined results of both types of projects, including construction and maintenance plus any added annual cost for management of herds and monitoring the allotment.

[6] Detail may not sum to "Total" due to rounding.

[7] Average annual cost of investment expenditures amortized at 7.875% over 50-year period.

[8] Additional cost (shown as negative value) due to restriction of vehicular access for livestock operator. (Based on a special study of each operator's annual mileage within affected areas and the additional costs to be incurred per mile - BLM, 1981).

[9] See footnote 1. If the reduction grazing adjustment is found to be unnecessary, compensating improvements would not be developed. Investments and grazing adjustments would be zero. The effects of this case are shown in parentheses.

economic value. For each alternative except the no wilderness/no action alternative the effects are shown as a range of values representing output changes from certain projects or activities which might or might not be allowed in wilderness. The effects of investments are shown separately from the effects of other output changes. Table 4-19 shows the benefits (increased economic value), costs and overall benefit/cost (B/C) ratios for investments which would or would not be allowed under each alternative.

Estimates of expected changes usually represent the maximum change expected even though that level is not expected to be attained for several years. The values of output increases related to investments, however, represent the expected year-by-year changes amortized to an annual value.

In table 4-18, the effects of other output changes are added to the effects of investments to obtain the total for all categories. This total omits the unknown management and other agency costs for enforcing vehicle restrictions, for development, and for acquisitions of private and split-estate lands by exchange. It is estimated that acquisition costs for each parcel acquired would amount to about $16/acre and a minimum of $6,000 per parcel. Also omitted from the total effects are unknown outputs related to energy and mineral development which could not be estimated.

Table 4-20 displays the effects on revenues of county and federal governments.

The effect on county governments, as estimated by the change in shared government revenues affected by wilderness designation, would be small. The maximum potential effect would be on Harney County, where approximately three percent of the county's 1981 expenditures were covered by receipts from federal government revenue in WSAs. This dependency would decrease to a minimum of 0.4 percent under the all wilderness alternative. Since the other counties are less dependent upon revenues generated in WSAs, there would be less effect to them from wilderness designations.

Table 4-21 shows the effects of the alternatives on local personal income. Additional income in local areas would be generated over an assumed five-year period by the construction of the investments. The estimates of the effects on local income omit effects which could not be quantified regarding recreation use, firewood harvest, mining claim maintenance and mineral production.

While the analysis of effects on personal income for most study areas indicates that wilderness designation could result in a decrease in local personal income, primarily from loss of oil and gas and geothermal leasing revenues, changes in recreation use resulting directly from designation were not quantified and therefore not included in the analysis. Although wilderness designation would result in a loss or displacement of vehicle-oriented recreation, it would also provide an identity which could be used by State or local entities to promote increased visitation and personal income in the region. Promotion of visitation to wilderness areas would have the greatest potential of benefiting communities in southeastern Oregon where the study areas are concentrated.

In summary, wilderness designation would cause a decrease in economic value and local personal income in most WSAs. The primary source of this

Table 4-19. Effects of Alternatives on Investments (Projects)

Investments	Alt. 1 All Wld.	Alt. 2 Wld. Emp.	Alt. 3 Con. Res.	Alt. 4 Eco. Div.	Alt. 5 P.A.	Alt. 6 Com. Dvl.	Alt. 7 No. Wld.
Allowed Investments:							
Annual Economic Value ($)	73,571	107,323	327,045	284,956	335,445	411,362	553,410
Annual Cost ($)	2,577	18,805	175,557	179,564	185,648	228,744	258,481
B/C Ratio	28.5	5.7	1.9	1.6	1.8	1.8	2.1
Possible Investments:							
Annual Economic Value ($)	332,432	311,669	200,877	209,825	196,541	137,027	0
Annual Cost ($)	130,007	121,837	52,465	54,398	49,699	26,130	0
B/C Ratio	2.6	2.6	3.8	3.9	4.0	5.2	N.A.
Unallowed Investments:							
Annual Economic Value ($)	147,407	134,418	25,488	58,629	21,424	5,021	0
Annual Cost ($)	125,897	117,839	30,459	24,519	23,134	3,607	0
B/C Ratio	1.2	1.1	0.8	2.4	0.9	1.4	N.A.

Table 4-20. Effects of Alternatives on County and Federal Government Revenues

	Alt. 1 All Wld.		Alt. 2 Wld.Emp.		Alt. 3 Con.Res.		Alt. 4 Eco. Div.		Alt. 5 P.A.		Alt. 6 Com.Dlv		Alt. 7 No. Wld.
Changes in:	From	To	From	To	From	To	From	To	From	To	From		
County Revenues($)	-189,822	-168,857	-147,237	-126,905	-58,143	-73,701	-52,477	-64,141	-47,010	-58,501	+32,310	+34,998	+65,645
Net Federal Revenues ($)[1]	-313,909	-167,852	-263,967	-122,990	-149,012	-40,106	-113,849	-33,845	-107,807	-28,018	+38,871	+57,685	+89,112

[1] Net of amount shared with state and local governments.

Table 4-21. Effects of Alternatives on Local Personal Income (1981 price levels)

		Alt. 1 All. Wld.		Alt. 2 Wld.Emp.		Alt. 3 Con.Res		Alt. 4 Eco. Div.		Alt. 5 P. A.		Alt. 6 Com.Dvl.		Alt. 7 No Wld.
Item	Unit of Measure	From	To	From	To	From	To	From	To	From	To	From	To	
Changes in Resource Outputs														
Grazing:														
Adjustments [1]	AUM	-6,521	27,763	-6,448	27,756	-4,006	27,763	-410	27,763	-410	27,763	21,666	27,763	27,763
Management[2]	AUM	0	482	178	482	257	482	302	482	302	482	452	482	482
Investment [3]	AUM	50	20,109	3,955	21,760	23,029	29,777	23,437	30,236	23,838	30,316	30,412	32,439	32,879
Big game hunting [4]	RVD	3,224	4,169	3,380	4,169	5,969	6,342	4,381	4,729	5,994	6,342	6,185	6,380	6,380
Upland game hunting [4]	RVD	0	221	11	221	81	227	137	227	137	227	196	231	231
Waterfowl hunting [4]	RVD	0	1,098	0	1,098	129	1,098	0	1,098	129	1,098	671	1,098	1,098
Fishing [4]	RVD	0	4,762	16	4,762	323	4,762	323	4,762	323	4,762	383	4,762	4,762
Nongame wildlile [4]	RVD	0	75	0	75	20	75	30	75	30	75	45	75	75
Timber	MBF	-277	-277	-244	-244	-2	-2	-277	-277	-2	-2	-2	-2	0
Firewood	Cords	-150	-150	0	0	0	0	0	0	0	0	0	0	0
Oil & gas leases	Acres	-412,866	-412,866	-344,021	-344,021	-211,753	-211,753	-213,341	-213,341	-189,569	-189,569	-30,340	-30,340	0
Geothermal	Acres	-26,628	-26,628	-16,088	-16,088	-9,238	-9,238	-9,238	-9,238	-9,238	-9,238	0	0	0
Income from Proposed Investments[5]														
Grazing	$	804	200,667	45,708	222,284	218,385	292,070	225,020	297,841	230,175	298,510	305,953	323,924	327,607
Big game hunting	$	39,330	48,031	40,874	48,031	70,106	73,703	50,626	54,025	70,304	73,703	72,093	74,054	74,054
Upland game hunting	$	0	3,429	161	3,429	1,202	3,521	1,972	3,521	1,972	3,521	3,005	3,578	3,578
Waterfowl hunting	$	0	11,299	0	11,299	1,872	11,299	0	11,299	1,872	11,299	8,161	11,299	11,299
Fishing	$	0	54,344	188	54,344	3,719	54,344	3,719	54,344	3,719	54,344	4,469	54,390	54,390
Other	$	0	2,596	0	2,596	2,596	2,596	0	2,596	2,596	2,596	2,596	2,596	2,596
Construction activity [6]	$	5,440	216,454	37,147	232,221	297,019	384,801	300,220	387,172	310,654	389,713	381,315	422,576	428,427
Total		40,134	322,296	86,931	343,913	297,880	439,463	281,337	425,556	310,638	445,903	398,207	471,771	475,454
Income from Other Expected Output Changes														
Grazing:														
Adjustments	$	-55,760	448,610	-53,997	448,610	463	448,610	56,508	457,942	56,508	457,942	346,443	457,942	457,942
Management	$	0	9,998	3,080	9,998	4,447	9,998	5,225	9,998	5,225	9,998	9,648	9,998	9,998
Timber	$	-31,979	-31,979	-25,349	-25,349	-293	-293	-31,979	-31,979	-293	-293	-293	-293	0
Firewood	$	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Oil & gas leases	$	-124,334	-124,334	-103,499	-103,499	-63,652	-63,652	-64,145	-64,145	-56,987	-56,987	9,136	9,136	0
Geothermal	$	-14,582	-14,582	-8,656	-8,656	-4,841	-4,841	-4,841	-4,841	-4,841	-4,841	0	0	0
Total [7]	$	-226,655	287,713	-188,421	556,171	-63,876	389,822	-39,232	366,975	-388	405,819	346,662	348,511	467,940
Income from All Output Changes														
All categories [7] [8]	$	-186,521 (-130,886)	608,079 (607,802)	-101,490 (-45,855)	663,087 (662,777)	234,004 (242,544)	827,355 (819,856)	242,105 (252,143)	790,601 (783,771)	310,250 (318,790)	849,792 (842,293)	742,939 (750,653)	928,352 (920,853)	941,464 (933,965)

[1] Adjustments include use of currently available but unallocated livestock forage and possible reduction adjustments.

[2] Expected future increases due to improved management that is not dependent on investments.

[3] Expected future increases due to range improvement investments.

[4] Expected future increases from proposed wildlife and livestock projects.

[5] Vegetative manipulation projects involving up to $1,774,190 total expenditures, and structural projects involving up to $1,934,430. Amounts shown in the table represent combined results of both types of projects, including construction and maintenance plus any added annual cost for management of herds and monitoring the allotment.

[6] Local personal income generated annually during assumed 5-year construction period. This amount cannot be added to the income results from grazing and hunting activity because it is not sustained over the analysis period.

[7] Detail may not sum to "Total" due to rounding. Total omits income from construction which is limited to 5-year period. See footnote 6.

[8] See footnote 1. If the reduction grazing adjustment is found to be unnecessary, compensating improvements would not be developed. Investments and grazing adjustments would be zero. The effects of this case are shown in parentheses.

decrease, in most of the WSAs affected as such, would be the loss of oil and gas and geothermal leasing revenues. However, most alternatives would permit an increase in economic value and personal income resulting primarily from greater use of WSAs, or parts of them, not found suitable for designation. These effects would result from use of available but unallocated forage and from structural and vegetative manipulation investments. The probability of any of the alternatives having a substantial effect on the economic future of the region is low.

Effects on Social Conditions

Impacts on social conditions may occur when decisions about land use (in this case, Congressional decisions whether or not to designate WSAs as additions to the National Wilderness Preservation System) affect people's economic opportunities, their access to resources, or the protection afforded resources they value.

The direct economic impacts of the various alternatives on local personal income generated by the use of BLM resources have been presented and discussed in the "Effects on Economic Value and Local Income" section. Social effects depend upon how important those impacts are to the overall local economy and upon the distribution of economic gains and losses within the local population.

The impacts from the various alternatives on local personal income range from a potential reduction of $187,000 (under the all wilderness alternative, with maximum constraints on developments) to a potential increase of $941,000 (under the no wilderness/no action alternative, with maximum investments for developments).

To evaluate the significance of these potential changes, table 4-22 compares them to the total personal income of the 11-county area in central and eastern Oregon that would be affected by wilderness decisions. As the table shows, the potential impacts would be slight, ranging from a potential reduction of 0.01 percent to a potential increase of 0.07 percent of the area's total personal income or employment. This is not to say that direct economic gains or losses to specific individuals would be insignificant; rather that the net social impacts on the community would be minor.

These potential direct economic effects are so minor, in relation to the existing economic conditions, that no significant, indirect social impacts are anticipated under any of the alternatives as a result of economic change.

BLM's wilderness management policy allows reasonable access to all nonfederal inholdings, including mineral estates within designated wilderness areas, so there would be no direct impacts on inholdings or their owners. Potential impacts could eventually occur from social pressure on the

Table 4-22. Estimated Changes in Local Personal Income and Employment

Alternative [1]	Net Change in Local Personal Income [1]	Potential Changes in Employment [2]	Percent Change [3]
Alt. 7 (No Wld.) high and low	$+941,464	+45 jobs	+0.07%
Alt. 6 (Com. Dvl.) high	+928,352	+44	+0.07
Alt. 6 (Com. Dvl.) low	+742,939	+35	+0.05
Alt. 5 (P.A.) high	+849,792	+40	+0.06
Alt. 5 (P.A.) low	+310,250	+15	+0.02
Alt. 4 (Eco. Div.) high	+790,601	+37	+0.06
Alt. 4 (Eco. Div.) low	+242,105	+11	+0.02
Alt. 3 (Con. Res.) high	+827,355	+39	+0.06
Alt. 3 (Con. Res.) low	+234,004	+11	+0.02
Alt. 2 (Wld. Emp.) high	+663,087	+31	+0.05
Alt. 2 (Wld. Emp.) low	-101,490	-5	-0.007
Alt. 1 (All Wld.) high	+608,079	+29	+0.04
Alt. 1 (All Wld.) low	-186,521	-9	-0.01

[1] Alternatives are arrayed in decreasing numerical order and portray the high and low values for each range of effects identified in table 4-21.
[2] Estimated by using a ratio of Total Personal Income divided by Total Employment for the eleven affected counties in central and eastern Oregon ($1,426,200 ÷ 67,475 = $21,136). Data from table 3-12.
[3] Percentage changes in total personal income (column 2 divided by $1,426,200,000) and in total employment (column 3 divided by 67,475) are essentially the same.

nonfederal owners to manage their lands consistent with management of the surrounding wilderness. The state would probably be most sensitive to such pressures.

A possible outcome from such situations would be for landowners to exchange the inholdings with BLM for lands outside wilderness areas. Conceivably, a private inholding could have some crucial significance to a ranch operation, such that ranch operations would be adversely affected if the property were exchanged. The probability of this situation occurring and the significance of these potential impacts are extremely difficult to measure. However, past experience has shown that these exchanges are usually of mutual benefit.

The general prohibition of motor vehicles from designated wilderness areas should reduce both trespass on inholdings and vandalism and harassment of livestock. Wilderness designation could increase primitive recreation, leading to increased foot trespass on private inholdings.

Overall, with respect to people's economic opportunities, their access to resources, and the protection afforded resources they value, the alternatives that incorporate the most trade-offs to allow diverse uses of the public lands (alternatives 3 and 4 especially, alternative 5 to a lesser extent) probably would cause the least social impacts. The more extreme alternatives that emphasize certain uses, largely to exclusion of others (alternatives 1, 2, 6 and 7), would be expected to cause the greatest social impacts.

Unavoidable Adverse Effects of the Proposed Action

In the areas not designated as wilderness (totaling 1,354,153 acres), several kinds of activities could occur which would reduce the quality of wilderness values, adversely affecting naturalness, opportunities for solitude and primitive recreation, and special wilderness features. Proposed activities, including implementation of grazing and wildlife improvement projects and harvest of timber and minor forest products, would directly affect the acres on which they take place and would indirectly affect much larger areas from which the projects and activities could be seen.

The undesignated lands would also be available for development of mineral and energy resources (1,345,234 acres available, although fewer acres have high or moderate favorability for occurrence of these resources), increases in grazing use (25,000 AUMs), and possible construction in potential utility corridors (48.5 miles). Despite mitigating measures, such activities would further reduce wilderness qualities.

In some areas designated as wilderness, mining or geothermal resource development could also occur, but only on mining claims that were valid and geothermal leases that were issued before October 21, 1976. Under wilderness designation, as proposed on 949,989 acres, some opportunities to increase livestock use (possibly by 35,000 AUMs) and opportunities for mineral and energy resource extraction (941,000 acres) would be foregone, with a resulting decrease in opportunities for local economic benefits. Closures to vehicle use in designated areas (334,335 acres) would result in declines in vehicle-oriented recreation that, in some cases, would not be offset by increases in primitive recreation. (Net recreation use would decrease in eight WSAs.) Although much of the vehicle-oriented recreation would shift to other nonwilderness areas, some use shifts would inconvenience the users.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Short-term consumptive uses of lands not designated wilderness - particularly mineral and energy development, wood products harvest, and rangeland vegetative manipulation projects to generate forage increases - would lead to long-term degradation of the wilderness values of those lands. Conversely, protection of wilderness values through designation would limit or eliminate short-term consumptive uses and vehicle-oriented recreation.

Irreversible and Irretrievable Commitments of Resources

Nondesignation of 1,354,153 acres as wilderness would leave these acreages available for development which could irreversibly degrade their wilderness values, foreclosing the option of wilderness designation in the future. Although designation of 949,989 acres as wilderness constitutes a long-term commitment of resources, such designation is reversible by Congress.

Chapter 5

Consultation and Coordination

North Sisters Rocks WSA (OR-12-8)

Public Involvement

The inventory/planning process leading to publication of this draft EIS has included numerous opportunities for public involvement. Several public meetings were held throughout Oregon soliciting public input on the various stages of the wilderness inventory (from draft initial inventory to final intensive inventory), which began in 1978 and was completed in 1981. BLM held 25 public meetings to discuss alternatives considered in the MFP and MFP amendment efforts which included the WSAs in this EIS. These efforts were completed in 1982 and 1983.

Solicitation of public input for the statewide wilderness EIS began on December 2, 1982, with publication in the Federal Register of a Notice of Intent to prepare the EIS and conduct scoping meetings. Following is a summary of results of the subsequent scoping meetings held throughout Oregon.

Scoping of Issues and Alternatives

This section discusses the issues raised and alternatives developed during the scoping process, including those issues and alternatives not addressed or analyzed in the EIS and the reasons for not addressing or analyzing them.

Issues Analyzed

Issues analyzed in the EIS are:

Wilderness System Diversity

Need to consider:

- cataloging of each WSA according to a botanical and ecological classification system;
- use of a more refined ecological classification system than the Bailey-Küchler (a system used in BLM wilderness studies nationwide);
- use of the Oregon Natural Heritage Plan as a model to refine ecological classification and/or as a yardstick for statewide alternatives; and
- the uniqueness of each WSA.

Ecosystems and Vegetation

Need to consider effects of the proposed action and alternatives on:

- ecological systems;
- vegetative composition;
- watershed values; and
- incidence of fires.

Also need to consider:

- impact of fire as a management tool to reach under each alternative; and
- use of fire in WSAs as a tool to reach desired ecological stage.

Economics

Need to consider:

- cost of renting or using horses instead of vehicles in wilderness areas;
- the amount wilderness values would have to be in order to offset economic losses;
- positive as well as negative economic aspects of wilderness designation;
- local economic impact;
- national economic benefit; and
- documenting economic assumptions.

Commercial Uses

Need to consider effects of the proposed action and alternatives on:

- range improvement projects and livestock grazing programs;
- mineral and energy development;
- powerline and road corridors; and
- timber production.

Also need to consider:

- alternative sources outside WSAs of commodity values (minerals, etc.) found in WSAs; and
- benefit/cost ratios of proposed range developments.

Recreation

Need to consider effects of proposed action and alternatives on:

- recreation visitor use (fishing, hunting, other); and
- recreation experience.

Also need to consider:

- quality hunting experiences in wilderness areas; and
- whether BLM would put in restrooms and build roads if areas were designated wilderness.

Adjacent Lands

Need to consider effects of proposed action and alternatives on:

- state and privately owned lands or mineral estates within WSAs (inholdings); and
- adjacent land ownership, including effects on adjacent private lands of developments, ORV (off-road-vehicle) use, etc., within WSAs, if WSAs not designated wilderness; and the effects of designation on trespass on private lands.

Also need to consider:

- the impact of increased use or pressure on adjacent private lands and public lands by wildlife and hunting as a result of wilderness designation, especially in parts of the state with many wilderness study areas;
- how wilderness designation would affect access to adjacent lands with mineral values;
- how wilderness designation would affect land exchanges with private landowners and the State; and
- acquisition of inholdings by exchange, and cost of acquisition.

Wildlife

Need to consider effects of proposed action and alternatives on:

- wildlife habitat and populations.

Also need to consider:

- reintroduction of wildlife species to various WSAs;
- whether wilderness designation would inhibit wildlife benefiting projects, including riparian fencing;
- to what extent wildlife habitat improvements would be allowed in critical deer winter range; and
- whether predator control would be allowed in wilderness areas to prevent special and serious losses to native wildlife species.

Other

Need to consider effects of proposed action and alternatives on:

- future options.

Also need to consider:

- consistency of proposed action and alternatives with other federal plans;
- conformity of proposed action and alternatives to Oregon Recreation Trails plan;
- mapping all ways in the EIS;
- documenting rationale for each preferred alternative in each WSA;
- documenting manageability problems used as decision criteria;
- documenting outside sights and sounds, fire management, wildlife management, etc., used as decision to eliminate from wilderness;
- comparing all alternatives against one another and to the current situation and projected situation;
- avoiding cross references to other documents - put pertinent material in wilderness EIS;
- whether cattle grazing conflicts with wilderness use and, if so, what aspects of grazing;
- what wilderness values would be impaired if areas not designated wilderness;
- value of de facto wilderness for both wilderness characteristics and supplemental values;
- how wilderness quality can be justified;
- to what extent designation would restrict use of motor vehicles for a variety of purposes;
- how wilderness designation would affect cultural sites; and
- how wilderness designation would protect resource values.

Issues Not Analyzed

The following issues were not addressed because either no significant impacts were identified or impacts would be the same under all alternatives:

- the total cost of wilderness studies;
- effect of increased grazing in WSAs on big game;
- impacts of range improvements and grazing on non-game wildlife;
- effect on old-growth timber and associated wildlife habitat;
- impacts on rare, threatened and endangered plants and animals;
- effect on future American character and literature;
- effect on research;

- the benefit of wilderness amenities making nearby towns attractive to business; and
- impacts of livestock use on natural values in WSAs.

The following "issues" raised by the public during the scoping process are not directly addressed in the EIS. The following discussion responds to some of the issues and cites reasons for not addressing these and other issues in the impact analysis:

- effects of the proposed action and alternatives on spiritual, psychological and mental health values. These values are inherent in people's minds, not in the wilderness study areas or their natural resources. Any effects of the alternatives on these values are not environmental consequences.
- fire history, frequency of natural fires for each area. The fire history of an area would be discussed in an EIS only if it were relevant to analysis of impacts of the alternative. This is rarely the case.
- potential for restoration to "original state." Our current inventory of soil classification and ecological potential is only adequate for us to infer the "original" state on some WSAs. In some locations the original state persists. For the remainder we do know generally that, to restore that state, we would have to modify livestock grazing and let wildfires return. It might not, however, always be possible to restore enough vegetative cover to carry fires. This potential is addressed, indirectly, in discussion of the impacts on vegetation in each WSA appendix.
- effectiveness of controlled burning to simulate natural conditions in a wilderness area. See comments above.
- human carrying capacity of each WSA. There are no established formulas for calculating the human carrying capacity for wilderness areas where recreational use is not practically limited to established trails. The carrying capacity issue can be addressed for only a few specific WSAs and in a broad sense.
- ratio of recreation users per square mile. Accurate recreation use figures do not exist for most WSAs.
- thorough description of existing situation or condition of what is on the ground now (wildlife, water, threatened and endangered species, etc.). An EIS is not supposed to be encyclopedic. The existing situation will be described thoroughly enough so that all significant impacts of the alternatives can be understood.
- map of existing situation for all significant resources found in each WSA. The cost of preparing and printing such maps is considered unwarranted, as they would add little to understanding of the significant impacts. Working maps portraying the situation for many resource values are maintained in the BLM district offices managing the lands and are available for review in those offices.
- cost of mitigation for threatened and endangered species if areas are not designated as wilderness and development is allowed. Development that would adversely affect federally-listed threatened and endangered species would not be permitted as such species are protected under the Endangered Species Act of 1973.
- declining federal funds available for managing federal land including wilderness. This issue is beyond the scope of this EIS, which merely addresses possible wilderness designation of less than 10 percent of the federal land in one state.
- possibility of seasonal closures to ORV use where hunting access conflicts with big game management objectives and/or where ORV use is considered harassment on winter ranges or during stress periods for the animals. The EIS cannot address ways of managing undesignated WSAs differently than the management set forth in the no wilderness/no action alternative. Such an analysis is beyond the scope of this EIS which addresses only wilderness designation alternatives to the existing land use plans for the WSAs.
- assessment of demand for wilderness, grazing, minerals and other resources as a price-quantity relationship. Sound data for such an assessment, which would require a determination of the marginal value of such resources, do not generally exist. Meaningful marginal value analysis would have to relate to the site-specific attributes of the resource, such as quality and accessibility. The cost of such an analysis for each resource for each WSA is not warranted.
- effect of horses (pack and saddle) fed on grains and/or hay introducing non-natural or native plants into ecosystem. Since recreational horseback use in some WSAs may increase due to wilderness designation, there may also be an increased likelihood of introducing non-native vegetation (including noxious weeds) through hay brought in from other areas. The overall increase in recreational use of horses in these areas as a result of wilderness designation, however, is expected to be slight. Thus, the impacts of such introduction of non-native vegetation would be minor, compared to those impacts that would occur if the areas were not designated wilderness.
- list of amounts (percentage of area) in each vegetative community (Oregon Natural Heritage Plan) in each WSA. BLM's inventory data was not consistently collected according to Natural Heritage Plan categories.
- parts of WSAs in a "virgin" condition and percent of WSA acreage. BLM's inventory data does not allow a definitive conclusion, particularly since there is no consensus on what vegetative condition constitutes "virgin" condition.
- impacts on adjacent U.S. Forest Service wilderness if BLM WSAs not designated. No WSAs in this study adjoin existing Forest Service wilderness.
- buffering. The BLM Wilderness Management

Policy (Sept. 1981) states that "No buffer zones will be created around wilderness areas to protect them from the influence of activities on adjacent land." On the other hand, the influence of anticipated activities on adjacent land has been a consideration in the design of boundaries for some alternatives.

- effect of not using motorized vehicles for emergency search and rescue (e.g., downed planes). The BLM Wilderness Management Policy states that motorized equipment and mechanical transport may be allowed when an emergency condition exists which involves health and safety.
- effect of proposed livestock improvements and the resulting changes in livestock use on wilderness values and the quality of the native vegetation. No objective measure of quality of native vegetation exists, and opinions vary with perspective. The discussion in Chapter 4, Environmental Consequences, Wilderness Values, however, addresses this issue from one perspective.
- effect of wilderness designation on the management of wild horses. For example, will aircraft use be allowed for it? Will costs of wild horse management increase? Wild horses would continue to be managed under a herd management plan accommodating horse habitat requirements and other resource needs, and providing for periodic gathering. Aircraft use may be allowed on a case-by-case basis with BLM State Director approval. Some increased cost of management would be likely, due to the need to remove panels at horse traps between gatherings and the need to restore roads and ways used in the gatherings. The magnitude of such cost increase is uncertain.
- criteria that would be used in determining whether or not to allow reintroduction of bighorn sheep in a WSA. The Oregon Department of Fish and Wildlife uses biological criteria in determining its proposals. BLM's criteria are identified in Wilderness Management Policy and involve weighing the benefits of reintroduction against any anticipated conflicts.
- effect of wilderness designation on fish treatments (i.e., rotenone). Fish treatments would be allowed in wilderness if it were determined that such treatment would assist restoration of natural conditions.
- whether sufficient habitat would be provided for threatened and endangered species to restore them to non-threatened levels. It is unlikely that any of the alternatives would accomplish this. Restoration (officially known as recovery) typically requires more complex actions than mere preservation of habitat, because habitat is only one of many factors affecting species viability.
- percent of state or National population that uses wilderness. National forest wilderness/primitive areas received slightly more than three million recreation visits in 1975. Since the number of visitors would be less, because many people make a number of trips each year, it appears that approximately 1 percent of the United States population visited national forest wilderness areas in 1975. Oregon national forest wilderness areas received approximately 310,200 visitor days (124,000 visits) in 1975. Although the actual number of Oregonians visiting national forest wilderness areas cannot be determined, since many people make several trips annually and use figures do not differentiate between states of residence, the information does indicate that an equivalent of 5 percent of Oregon's population visited the state's national forest wilderness areas in 1975.
- categories of people who use wilderness areas. No studies have been undertaken to categorize the potential users of BLM wilderness areas.
- whether more public physical and legal access should be provided to these WSAs. Public physical and legal access is considered adequate in most of the WSAs. In the very few where access is limited, the pertinent appendices address this point. However, the question of whether more access should be provided is considered irrelevant to analyzing impacts of wilderness designation versus nondesignation.
- the potential impact of road closures on the transportation network in the vicinity of merged WSAs. None of the roads proposed for closing provide sole access to nonfederal lands or are essential to general use and management. In addition, no significant adverse impacts are expected on point-to-point travel. In most cases the roads that might be closed are in rugged country and are poor quality, local access roads; they are not connecting routes for travelers. In each case, alternate connecting routes of higher quality are available in the local areas.
- access for the elderly and disabled. Prohibitions on the use of motorized vehicles would generally limit access to those persons capable of relatively strenuous activity. An exception would be elderly and disabled visitors on river float trips in wilderness areas through which the Owyhee River and John Day River extend (i.e., Owyhee Breaks, OR-3-59; Lower Owyhee Canyon, OR-3-110; Thirtymile, OR-5-1; Lower John Day, OR-5-6; and North Pole Ridge OR-5-8).
- cost of management and development under each alternative. The costs of proposed range and wildlife developments can be derived with reasonable confidence, based on substantial BLM experience with the installation and maintenance of similar improvements. But there is substantial uncertainty whether many of these proposed improvements would be developed if the areas were designated wilderness. On the other hand, it is clear that wilderness designation would increase the costs of some management activities (e.g., requiring horses for use supervision and for other management, boundary signing, patrols for enforcement). There is inadequate information, however, from which to estimate the added cost of wilderness management for scattered blocks of grassland and desert. Thus, comparison of alternatives in this regard would have little value.
- federal cash flow under alternatives. This

information is approximated in the "change in net federal revenues" data in table 4-20.

- benefits to private and public sectors separately. An attempt to sort benefits in this manner would entail tenuous assumptions as to which benefits are private and which are public. All economic benefits are to some degree both private and public. The clearer dichotomy which has been addressed is that between local and national benefits.
- economic value of hunting and fishing. The impacts of the alternatives on the economic benefits of hunting and fishing were not quantifiable, because changes in those activities from wilderness designation or nondesignation could not be quantified. For benefit/cost analysis of livestock and wildlife investments proposed under existing BLM plans, however, the effects on hunting and fishing were estimated. Hunting and fishing were valued using willingness-to-pay estimates developed for the Forest Service (1980 RPA Program, Appendix C). Personal income generated by the expenditures of hunters and anglers in destination areas was also estimated.
- keeping vehicles out of wilderness. In most areas, signing, informational programs or natural barriers would prevent the illegal use of vehicles from becoming a serious problem. Areas which have been used by many recreational off-road-vehicle drivers in the past, such as the Sand Dunes WSA (OR-1-24) in BLM's Lakeview District and the playa in the west end of Alvord Desert WSA (OR-2-74) in the Burns District, might be exceptions. Those areas probably would not be manageable as wilderness because of the difficulty in excluding vehicles.
- manageability of areas with split-estate inholdings (federally managed surface, state or privately owned mineral rights) and state or privately owned surface as wilderness. Many existing wilderness areas have inholdings, which have not precluded management of the areas as wilderness. Inholdings could complicate management of some of the WSAs as wilderness, but in all but one of the areas, the potential problems would not be significant. Inholdings probably would present a serious management problem in the Mahogany Ridge WSA (OR-2-77) in the Burns District. The primary feature of the WSA is the Trout Creek drainage, and most of the land along the creek is privately owned.
- possibility of unacceptable uses of wilderness threatening public safety, such as growing of marijuana. It is possible that a wilderness area could be used for an illegal activity. However, because all remote areas are subject to such activities, it is unlikely that wilderness designation would have any effect on these activities. Law enforcement authorities can be authorized to use vehicles in wilderness areas to pursue fugitives or eliminate illegal activities.
- enforceability of wilderness. Potential problems with the use of recreational off-road vehicles in two WSAs and the use of private inholdings in a third are described above. With the possible exception of those areas, the areas would be manageable as wilderness.
- managing the unfamiliar or unprepared wilderness users who get lost or injured. Wilderness designation is not expected to cause a significant increase in recreation use in any of the areas; therefore, there would be little or no change in the number of people requiring aid or rescue. Motorized vehicles, including aircraft, may be used in emergencies involving health or safety of visitors.
- effect of designation on litter and vandalism. Because wilderness designation is expected to cause little increase in recreation use over the long term (see Recreation Use section, Chapter 4), vandalism and litter would not increase. Vandalism and litter would decrease along vehicle routes closed by the designation, but would probably increase on the alternative routes used outside the designated area.

Formulation of Alternatives

Appendices

BLM initially suggested that the appendices address the following alternatives for each WSA:

- All Wilderness
- No Wilderness/No Action
- Enhanced Wilderness (manageability-oriented).
- Partial (resource conflict-oriented)
- The BLM Preferred Alternative (may be one of the four preceeding alternatives or may differ from all of them)

People who commented during the scoping process accepted these alternatives as an appropriate range to consider for each WSA. For some WSAs, the enhanced wilderness and/or the partial alternatives are not analyzed because the environmental effects would not be substantially different from the other alternatives analyzed.

Statewide

At public scoping meetings BLM initially suggested that a minimum number of appropriate alternatives be:

- The BLM Preferred Alternative (Proposed Action)
- All Wilderness
- No Wilderness
- Enhanced Wilderness
- Partial

Subsequent scoping, both within BLM and through public contacts and meetings, led to the following statewide alternatives for analysis in the EIS:

- All Wilderness
- Wilderness Emphasis
- Conflict Resolution Emphasis
- Ecosystem Diversity Emphasis
- BLM Proposed Action (Preferred Alternative)
- Commodity Development Emphasis
- No Wilderness/No Action

These alternatives are described in Chapter 2, Description of Alternatives, Including the Proposed Action.

The no wilderness alternative is the no action alternative, since the management of each WSA, in the absence of wilderness designation, will follow existing management plans. The two alternatives are, therefore, combined as one and the same.

The statewide alternatives incorporate all alternatives developed for the individual WSAs in the appendices. Other approaches to aggregating the WSA-specific enhanced wilderness and partial alternatives were considered, but were discarded, as they were arbitrary and not as related to an alternative design objective as those indicated above. Because there are innumerable possibilities of alternative combinations, the alternatives above were developed to provide a full range of possibilities, from all wilderness to no wilderness. (These alternatives are further defined in Chapter 2.)

The following alternatives proposed by the public either duplicate the selected alternatives or are not analyzed for other reasons as noted:

- No Wilderness but Special Management of Supplementary Values (e.g., recreation, wildlife, rare plants). It is beyond the scope of this EIS to address management options for the no wilderness/no action alternative other than that currently planned. To do otherwise would be to use the Wilderness EIS to reopen the entire land use decision process for all lands in the WSAs.
- Focus on Protection of Supplemental Values. This proposed alternative would use the presence of supplemental values such as threatened and endangered species to determine which portions of WSAs would be recommended for wilderness. Since such supplemental values will be protected without wilderness designation, the impacts on supplemental values would be the same as the no wilderness/no action alternative.
- Full Ecosystem. This alternative would promote natural values, such as wildlife habitat diversity, over the largest land area. It would be the same as the all wilderness alternative.
- Maximize Cash Flow to Government. Such an alternative would require relying on untested assumptions about the cost of managing wilderness areas in sagebrush and grassland. This alternative would be interesting but would not address any major environmental objective.
- Postpone Wilderness Decision on Areas Lacking Sufficient Data, Until Further Planning. This proposed alternative assumes that BLM has substantially different degrees of data on its WSAs. Because of BLM's systematic wilderness inventory process, BLM believes this is not the case. Furthermore, the long-term impacts of a no-decision alternative are essentially unanalyzable and therefore cannot be compared meaningfully to other EIS alternatives.
- A Partial Alternative Designating All Areas Without Cost-Efficient Multiple Use Conflicts. The partial alternative for individual WSAs expressly excludes from wilderness only those proposed BLM-sponsored projects that have at least a 1:1 benefit/cost ratio, or that provide supplemental benefits to unquantifiable (in economic terms) resources, such as wildlife or water quality, which justify their cost. Exclusion of areas with mineral values was also a concern embraced in this proposal, but the mineral values are so speculative that no meaningful cost-efficiency test can be devised for such an alternative. The conflict resolution emphasis alternative approaches the objective suggested by this alternative.
- Maximize Economic Benefits to Local Community. Information does not exist to design such an alternative based on quantified outputs. The commodity development emphasis alternative addresses this objective.
- An Alternative Providing For Intensive Uses and Commodity Development (grazing, mining, recreation access, etc.) Outside WSAs. The all wilderness alternative serves the same purpose as this alternative, except that it provides for continuing grazing use at essentially current levels. Thus, this alternative differs only by being a no grazing alternative, which is not considered relevant given the Congressional requirement that grazing be allowed to continue in BLM wilderness areas.
- District Managers' Preferred Alternative. The preferred alternatives previously announced by several district managers at the completion of their planning efforts have been modified for some WSAs to reflect minerals data and ecosystem diversity information that was not available to them at that time. The preferred alternative in the Draft EIS is now the district managers' preferred alternative as well as the State Director's.

List of Agencies, Organizations, and Officials to Whom Copies of the Statement are Sent

In addition to public scoping meetings, BLM consulted with the Oregon Department of Land Conservation and Development; the Oregon Department of Fish and Wildlife; and the U.S. Forest Service, Region 6, in developing the draft EIS. Close coordination was held with the Forest Service primarily as a result of the joint wilderness study of the Homestead WSA (BLM OR-6-2 and USFS 6291). The two agencies agreed on a preferred alternative for this joint study area.

Copies of the draft EIS will be sent to the following agencies, organizations, and officials as well as the many individuals who have requested to be placed on the Oregon Wilderness Mailing List.

1.Government Agencies

Federal

Environmental Protection Agency
U.S. Department of Agriculture
Forest Service
Soil Conservation Service
U.S. Department of Defense
Air Force
Corps of Engineers
U.S. Department of Energy
Bonneville Power Administration
Nuclear Regulatory Commission
U.S. Department of the Interior
Bureau of Indian Affairs
Bureau of Mines
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
Minerals Management Service
National Park Service

State

Oregon

Office of the Governor
Department of Economic Development
Department of Energy
Department of Environmental Quality
Department of Fish and Wildlife
Department of Forestry
Department of Geology and Minerals Industries
Department of Land Conservation and Development
Division of State Lands
Division of Parks and Recreation

Nevada

State Clearinghouse

County

Planning Departments and/or County Commissioners of:

Oregon Counties

Baker
Crook
Curry
Deschutes
Gilliam
Grant
Harney
Jackson
Jefferson
Lake
Malheur
Sherman
Wasco
Wheeler

Nevada Counties

Humboldt

2.Congressional

U.S. Senator Mark Hatfield, Oregon
U.S. Senator Robert Packwood, Oregon
U.S. Senator Chic Hecht, Nevada
U.S. SenatorPaul Laxalt, Nevada
U.S. Representative Les AuCoin, Oregon
U.S. Representative Ron Wyden, Oregon
U.S. Representative Denny Smith, Oregon
U.S. Representative Robert F. Smith, Oregon
U.S. Representative James Weaver, Oregon
U.S. Representative Henry Reid, Nevada
U.S. Representative Barbara Vucanovich, Nevada

3.State Legislature

Oregon State Senators, Districts 26, 27, 28, 29, and 30
Oregon State Representatives, Districts 52, 54, 55, 56, 58, 59, and 60
Nevada State Senators, Capital Senatorial District and Western Nevada Senatorial District
Nevada State Representative, District 34

4.Groups and Organizations

1000 Friends of Oregon
American Alpine Club
American Fisheries Society
American Forest Institute
American Mining Congress
American Wilderness Alliance
Applegate Citizens Opposed to Toxic Sprays
Applegate Occupation Team
Associated Oregon Industries
Associated Oregon Loggers, Inc.
Association of 0&C Counties
Association of Oregon Counties
Audubon Society (various chapters)
Boy Scouts of America
Cascade Holistic Economic Consultants
Cascade Motorcycle Club
Citizens Alliance (Wolf Creek) for Protection of
  Environment
Columbia River Inter-Tribal Fish Committee
Confederated Indian Tribes
Confederated Tribes of the Umatilla Reservation
Crook County Rock & Mineral Club
Crook County Stockgrowers
Defenders of Wildlife
Deschutes Co. 4-Wheelers
Desert Trail Association
Douglas Timber Operators
East Cascade Action Committee
East Oregon Forest Protective Association
Eastern Oregon Wilderness Coalition
Environmental Education Association of Oregon
Environmental Education Center
Eugene Mineral Club
Eye of the Raven
Federation of Fly Fishermen
Federation to Protect the Williams Valley Watershed
Foots Creek Residents
Friends of the Earth
Gem & Mineral Club of Prineville
Geothermal Resources Council
Gold Prospectors Association
Grant County Conservationists
Hampton Butte Grazing Association
Headwaters Association
Healthy Environmental Action League
Industrial Forestry Association
Institute of Ecology
Izaak Walton League (various chapters)
Jefferson County Livestock Association
Josephine County Sportsman Association
Josephine County Sourdoughs
Josephine County Timber Riders
Keep Oregon Green Association
Klamath Canyon River Outfitters
League of Women Voters (several chapters)
Lichen (Environmental Sanctuary)
Maintain Eastern Oregon Wilderness
Mazamas
Motorcycle Industry Council
Motorcycle Riders Association
NW Coalition for Alternatives to Pesticides
NW Timber Association
National Cattlemen's Association
National Public Lands Task Force
National Wildlife Federation
Native Plant Society of Oregon
Natural Resources Defense Council
Nature Conservancy
Northwest Pine Association
Northwest Steelheaders - Trout Unlimited
Obsidians, Inc.
Ochoco Snow Sports
Oregon Cattlemen's Association
Oregon Council of Gem & Mineral Clubs
Oregon Council of Rock & Mineral Clubs
Oregon Environmental Council
Oregon Farm Bureau Federation
Oregon Forest Industries
Oregon Forest Protection Association
Oregon Grotto Conservation Committee
Oregon Guides & Packers
Oregon High Desert Museum
Oregon High Desert Study Group
Oregon Historical Society
Oregon Horsemen
Oregon Mister Long EArs
Oregon Natural Heritage Program
Oregon Natural Resources Council
Oregon Park & Recreation Society
Oregon Sheep Growers Association
Oregon Snowmobile Association
Oregon Sportsman & Conservationist
Oregon Trout
Oregon Wheat Growers League
Oregon Wilderness Coalition
Oregon Wildlife Federation
Oregon Women for Timber
Oregonians for Food & Shelter
Owyhee Cattlemen's Association
Pacific Lands Council
Pacific Logging Congress
Pacific NW 4-Wheel Drive Association
Pine Creek Grazing Association
Prineville Ridge Riders
Resources for the Future
Rogue Gem & GEO Club
Rogue River Guides Association
Rogue River Outfitters Association
Rogue River Hang Gliding Association
Sage, Inc.
Save Our EcoSystems
Selma Concerned Citizens
Sierra Club (various chapters)
Silvies Valley Grazing Association
Siuslaw Four-Wheel Drive Club
Society of American Foresters
Southern Oregon Citizens Against Toxic Sprays
Southern Oregon Northwest Citizens Against
  Pesticides

Southern Oregon Resources Alliance
Southern Oregon Timber Industry Association
Southern Oregon Timber Riders
Stop Oregon Litter and Vandalism, Inc.
Stop Poaching & Vandalism
Sunrise 4-Wheelers
Sunriver Anglers Club
T&E Plant Committee - Blue Mountain Chapter
Takilma Citizens Association
Terra Trackers
Threatened & Endangered - Little Applegate Valley
Timber Operators Council
Trail Riders Association, Inc.
Trails Unlimited
Utah Wilderness Association
Washington Environmental Council
Washington Forestry Protection Association
Washington State Federation of Garden Clubs
Washington Wilderness Coalition
Western Forest Industries Association
Western Forestry Center
Western Forestry & Conservation Association
Western Lands & Minerals
Western Range Service
Western Trailblazers Association
Western Wood Products Association
Whatever 4-Wheelers
Wild Horse Organized Assistance
Wilderness Society
Wildlife Management Institute
Willamina Hilltoppers
Yakima Rock & Mineral Club

Addenda

Addendum 1

Economic Value and Local Personal Income Related to Resource Outputs

The value of a resource in economic terms is best measured by its contribution to the well-being of the economy. Generally, the price of a good is taken as the measure of its value to society because what people are willing to pay measures its worth to them. Some qualifications must be made to price as the measure of value, however. If the good cannot be sold (e.g., reduced erosion), if it is in limited supply with no perfect substitute (e.g., river running), or if its market is not completely open with many buyers and sellers bidding to determine the price free of any constraints, price is not a satisfactory measure of value.

An example of such a price is the fee for grazing livestock on BLM lands. The market for grazing privileges is not open, nor is the fee (price) set by market forces. For these reasons, price is not a good measure of value of livestock grazing on BLM lands. Instead, the average price of grazing on non-irrigated private lands has been used in this EIS. This price is derived from an annual survey of private land leases conducted by the U.S. Department of Agriculture.

Also, the price of a good, at best, measures only part of its total value to society. It is well known that a higher price means less will be purchased, and if the price of a good becomes very high, some amount may still be purchased provided the good has no close substitute. If it were possible to offer the good at a price higher than anyone were willing to pay, and then at successively lower prices, selling all that people wanted at each price level until the supply was used up, the total sales value would then represent the full value of the good to society, or what is called the "willingness-to-pay" for the good. The price ordinarily represents only the value of the last unit sold (called the marginal unit), but since everyone obtains the good at the same price, the people who would have paid a higher price but didn't have to, have obtained more in value than they have paid for. This amount is called consumer surplus. The value of a good to society differs from its market value by the consumer surplus. The price of a good in most cases is an adequate measure of its value because we are concerned with a relatively small amount which may be considered a marginal addition to supply. However, if a good is restricted in supply or not sold in an open market with many buyers and sellers, with price freely determined, willingness-to-pay is an appropriate measure of value.

Many estimates of willingness-to-pay for the major non-market resource outputs have been made through surveys of the users of those outputs. The values adopted by the Forest Service for the 1980 Forest and Rangeland Renewable Resource Planning Act (RPA) program have been utilized in this document. (Department of Agriculture, 1980 RPA Program, Appendix C.)

Personal income is composed of payments to people in the form of wages, rents, interest and profit. In this EIS, effects on the local economy are measured primarily by changes in local personal income. Regions for analysis are made up of counties or groups of counties as shown in tables 3-12 and A-1.

Income to local residents is produced for example, when cattle raised on BLM forage are sold or when recreationists make purchases in the area. A portion of the income received by local residents is spent on other purchases within the local community, and a portion of those receipts again may be spent locally.

The end result of this respending activity within a community is called a multiplier effect. An economic model of inter-industry relationships within a local area is used to estimate multiplier effects. Multiplier effects have been estimated from models for the areas identified in table 3-12 by use of the IMPLAN system of the Forest Service (1983).

Table A-1 shows the economic value and local personal income per unit of output used in the economic analysis. The local personal income per unit of output was derived using total income multipliers from IMPLAN models for the regions identified.

Table A-1. Economic Value and Local Personal Income Per Unit of Output (1981 dollars, except timber harvest)

			Local Personal Income Per Unit							
Resource Output	Unit	Economic Value	Central Oregon	Lower John Day	Baker County	Malheur County	Harney County	Lake County	Jackson-Klamath	Grant County
Grazing	AUM	7.54	17.30	9.86	11.68	16.08	8.37	10.27	19.69	8.10
Big game hunting	RVD	22.70	10.84	5.83	12.14	8.49	9.93		12.20	9.06
Upland game hunting	RVD	29.18	16.75	8.18		13.27	15.39		18.84	
Waterfowl hunting	RVD	28.10	14.51	7.35			12.44		16.18	
Cold water fishing	RVD	19.86	13.12	6.56			11.40		14.63	
Dispersed recreation	RVD	4.05					5.88			4.02
Non-game wildlife viewing	RVD	39.19	280.66							
Timber harvest	Mbf	[1]	280.66		200.94		190.91		291.70	239.96
Oil and gas leases [2]	$	1.00	.3011	.3011	.3011	.3011	.3011	.3011	.3011	.3011
Geothermal leases [2]	$	1.82[3]	.3011	.3011	.3011	.3011	.3011	.3011	.3011	.3011
Construction	$	1.00	.7208	.5024		.6853	.6691	.6170	.7712	.6833

[1] Timber harvest value (1983 dollars) based on FY 1983 average BLM timber sale price per Mbf in local area: Central Oregon - $42.16; Baker - $40.00; Jackson-Klamath - $100.74; and Grant County - $116.51.

[2] Local personal income generated from oil and gas and geothermal leases was calculated as the portion of lease receipts expected to accrue to local goverment employees as salaries and the additional personal income generated locally by their expenditures. The calculation was made using an economic model for the Willamette Valley and was applied in each of the local areas as a reasonable estimate of the maximum effect for that area.

[3] Actually $1.00 to $2.00 per acre; $1.82 is the average value over the existing leases in the WSAs.

Addendum 2

Mineral Supply and Commodities Information

As an analytical baseline for impact analysis, the following mineral information indicates the significance of minerals with respect to scarcity, uses, and future demands, likely to be found in the Oregon WSAs. Mineral supply forecasts are based on politically available proven reserves. Such forecasts show that some mineral reserves will only last one or two generations at expected consumption levels. In many cases, however, reserves have increased due to the discovery of new mineable deposits and new technology for retrieving previously uneconomic deposits.

Not enough is known about worldwide mineral deposits to make firm projections about the future availability of minerals. Mineral exploration relies heavily on geologic inference with the aid of geophysics and geochemistry.

The reserve base includes those minerals that are currently economic (reserves), marginally economic (marginal reserves), and subeconomic (subeconomic reserves). Reserves are a part of the reserve base that could be economically extracted, whereas marginal reserves border on being economically producible. Economic and technologic factors may affect the economic uncertainty of marginal reserves.

To reflect varying degrees of geologic certainty, undiscovered resources may be divided into two categories, hypothetical and speculative. Hypothetical resources may be reasonably expected to exist in the same producing district or region and under analogous geologic conditions as similar known mineral bodies. Speculative resources may occur either in favorable geologic settings where mineral discoveries have not been made, or in types of deposits as yet unrecognized for their economic potential.

Of the minerals having an international market, domestic resources of bentonite, beryllium, boron, copper, diatomite, lead, lithium, molybdenum, and sodium appear to be sufficient to supply U.S. needs for established uses in the forseeable future. The U.S. relies on imports of asbestos, chromium, fluorite, gold, manganese, mercury, oil and gas, potassium, silver, tin, and zinc.

Of the minerals having a national market, the domestic reserves of pumice, metallurgical grade limestone, perlite, optical calcite, and uranium are expected to adequately supply the domestic demand. The industrial minerals of pumice, perlite, and metallurgical grade limestone are in demand throughout the country, whereas the American uranium industry has experienced a set back due to a sharp decline in new orders for nuclear powerplants. Recently, optical calcite for prisms is said to have been in demand for use in laser technology. Minerals marketed on a regional level include geothermal energy, slab lava, zeolites, limestone, and semi-precious stones. Semi-precious stones comprise a large variety of minerals including agate and jasper. Annual production of these stones is hard to measure since a significant amount of material is collected by individual hobbyists.

Sand, gravel, aggregates, and cinders are mineral commodities with a localized market. The location, tonnage, quality, accessibility, and economic availability to the local market are all factors in determining the value of such commodities. In some areas of the country, urban encroachment precludes future development of valuable deposits of sand, gravel, and aggregates, and thus depletes valuable needed supplies. An increase in demand for such commodities is likely in the future. On a nationwide scale, cinder deposits are much less common than sand, gravel, and aggregate deposits, and that demand is expected to increase in the next decade.

Table A-2 describes the uses and demands for minerals having potential for occurrence in Oregon WSAs. Due to the unavailability of market, price, or production data, slab lava, zeolites, cinders, optical calcite, semi-precious stones, sand and gravel, and limestone are discussed separately in this addendum (see below) and are not included in the table. The energy commodities are also discussed separately and not included in table A-2.

Slab Lava

Basaltic lavas, especially the young lava flows, tend to fracture into thin slabs, sometimes only 1/2 to 2 inches thick. These slabs are easy to work with and are used as a decorative 'slap-on' type veneer. A 1979 study for BLM showed that retail prices in the Portland market were $290 a ton for Shoshone, Idaho lava (1-1/2 inch slabs) and $100 a ton for massive slab lavas 3 to 4 inches thick. Quarry cost

Table A-2. Mineral Commodity Summary (1984 data) [1]

	U.S. Production/Consumption				
Mineral Commodity	Production in 1984	% of World Production	% Imported [2] (or exported, as noted)	Projected [3] Annual Demand Increase	Price Trends
Asbestos	60,000 short tons	less than 2%	75%	none	Average price per ton f.o.b. mine: 1979 ($310); 1980 ($382); 1981 ($406); 1982 ($392); 1983 ($399); and 1984 ($404).
Bentonite	2,800,000 short tons	data unavailable	exported	2%-4%	Price data not available. Average values per ton for 1981: $29.30 for Wyoming bentonite, $30.68 Montana, and $24.62 Mississippi.
Beryllium		W	W	W	-Average price per pound of metal; 1979 ($120); 1980 ($140); 1981 ($173); 1982 ($194); 1983 ($206) and 1984 ($213).
Boron (Boria, B_3O_2)	680,000 short tons	60%	exported	3.2%	Average price per ton granulated borax, f.o.b. mine: 1979 ($169); 1980 ($169); 1981 ($186); 1982 ($201); 1983 ($201); and 1984 ($201).
Chromium	none	-	82%	6.5%	Relatively stable for past 6 years; $110/metric ton Turkish high-chromium chromite and $52-$56/metric ton South African high-iron chromite.
Cinders	See separate discussion in preceding text.				
Cobalt	none since 1971	-	95%	3%	Price ranges per pound: 1979 ($20-25); 1980 ($25); 1981 ($17.26-$25); 1982 ($12.50-$17.26) and 1983 and 1984 ($12.50).
Copper	1,050,000 short tons	13%	21%	1.8%	Average price per pound domestic copper wirebar: 1979 (93.3¢); 1980 (102.4¢); 1981 (85.1¢); 1982 (72.8¢); 1983 (77.0¢); and 1984 (66.0¢).
Diatomite	640,000 short tons	38%	exported	3%	Average price per ton of diatomite f.o.b. plant: 1979 ($126); 1980 ($146); 1981 ($165); 1982 ($176); 1983 ($185); and 1984 ($200).

Uses and Percent of Consumption	Occurrences in Oregon
Asbestos-cement pipe 12%, flooring 21%, friction products 22%, roofing 3%, packing and gaskets 6%, coatings and compounds 12% and all others 25%.	No commercial production in Oregon; known occurrences in Oregon have had core drilling and bulk sampling; domestic demand at lowest level since 1940.
Drilling mud 44%, iron ore pelletizing 12%, foundary sand bond 16%, other 28% including animal feed binder, water proofing and sealing, etc.	Bentonites in Oregon generally thought to be calcium-rich variety, though some known to be high in sodium. Oregon bentonites are used mostly for pond and ditch sealants, binders, and cat litters.
High technology applications (nuclear, aerospace, electronics) 93%, other 7%.	Beryllium occurrences of any significance are not known in Oregon.
Glass products 55%, fire retardants 10%, detergents, agricultural, biological, metallurgical and nuclear uses 17%, other 18%.	Southern portion of Alvord desert, near Borax Lake, has geologic characteristics favorable for major borax deposits. Borax was produced from this area in commercial quantities around 1900.
Metallurgical and chemical industry 79%, refractory industry 21%.	Strawberry Mountain and Aldrich Mountain areas in eastern Oregon include Alpine-type chromite deposits in podiform shapes. Total past production from these deposits is 30,000 tons. Most ores mined were high-chromium type though some higher grades of high-alumina types were also mined.
Superalloys (mainly gas turbine engines) 34%, electrical applications 19%, driers 10%, catalysts 10%, metal cutting and mining tool bits 6%, other 21%.	Cobalt in eastern Oregon reported from copper-cobalt-gold veins in Quartzburg mining district, Grant County. Geological setting south of Canyon City (Strawberry Mountain and Aldrich Mountain) favorable for byproduct cobalt in nickel deposits.
Electrical 24%, construction 34%, industrial machinery 16%, transportation 12%, other 14%.	Eastern Oregon includes geologic characteristics favorable for two major types of copper deposits, porphyry copper and massive sulfides. Copper mining and refining are important source of many other metals. In 1982 they yielded: all domestic production of primary arsenic, selenium, tellurium, platinum, and palladium; about 20% of primary gold; about 27% of silver; and nearly 40% of primary molybdenum.
Filter aid 62%, industrial fillers and additives 34%, and others 4%.	Large deposits of diatomite and diatomaceous earth are found in eastern Oregon. One firm produces diatomite from Christmas Valley, Lake County for use as oil and grease absorbents and cat litter. Another firm has announced plans for large scale production of filter grade diatomite from deposits near Drewsey, Harney County.

Mineral Commodity Summary (1984 data) Continued [1]

	U.S. Production/Consumption				
Mineral Commodity	**Production in 1984**	**% of World Production**	**% Imported [2] (or exported, as noted)**	**Projected [3] Annual Demand Increase**	**Price Trends**
Energy Commodities	See separate discussion in preceding text.				
Fluorite	70,000 short tons	1.4%	91%	2.7%	For the past 4 years, year-end price of acid-spar has been $170-$180 per ton and met-spar $110-$125 per ton.
Gold	2,300,000 troy ounces	5.1%	16%	2%	Average price per ounce: 1978 ($193.55); 1979 ($307.50); 1980 ($612.56); 1981 ($459.64); 1982 ($375.91); 1983 ($424.00) and 1984 ($365.00).
Lead	340,000 Metric tons	11%	18%	1.3%	Per pound: 1980 (42.5¢); 1981 (36.5¢); 1982 (25.5¢); 1983 (21.5¢) and 1984 (25.0¢).
Limestone	See separate discussion in preceding text.				
Lithium	W	W	exported	5.6%	Year-end prices per pound for lithium carbonate and lithium hydroxide monohydrate, respectively: 1979 ($1.16 and $1.53); 1980 ($1.30 and $1.72); 1981 ($1.41 and $1.84); 1982 ($1.41 and $1.84); 1983 ($1.48 and $1.93); and 1984 ($1.54 and $1.93).
Manganese	none	-	99%	3%	Price range for metallurgical ore per long ton unit 1979 ($1.36-1.42); 1980 ($1.38-1.75); 1981 ($1.66-1.76); 1982 ($1.58-1.68); 1983 ($1.38) and 1984 ($1.43).
Mercury	19,100 flask [4]	10%	60%	less than 1%	Average price per flask at New York: 1979 ($281); 1980 ($389); 1981 ($414); 1982 ($371); 1983 ($322); and 1984 ($320).

Uses and Percent of Consumption	Occurrences in Oregon
About 66% of fluorspar (the ore of fluorite) consumed in U.S. in 1984 went into manufacture of hydrofluoric acid and 33% as a flux for steel making.	Fluorite occurs in an unconventional-type deposit in Oregon. This bedded deposit in lake sediments near Rome, Malheur County is conservatively estimated to contain 12 million tons of fluorite. Grade is low; higher grades contain 16.4% fluorite.
Jewelry and arts 54%, industrial (mainly electronic) 34%, dental 11%, small bars, etc., mainly for investment 1%.	Relatively high prices continued to stimulate exploration and development, especially in the western states. Production of gold centered at two opposite corners of Oregon, northeast at Blue Mountains and southwest at Klamath Mountains, mostly from placer and some from lode mines. These areas were also sites of increased exploration activities. Increasing interest to explore for submicroscopic particles of gold in volcanic areas of Malheur and Harney Counties was observed. This previously unknown gold province seems to be in the early stages of discovery.
Transpotation 75%; construction, ammunition, electrical, TV glass, ad paint 22%; other 3%.	No commercial production in Oregon; geologic characteristics are favorable for the occurrence of lead in the Siskiyou Mountain area of southwest Oregon. Substitution by plastics has reduced the use of lead in building construction, electrical cable covering, and in cans and containers.
Used in aluminum potlines, accounting for 35% of domestic consumption. Other major uses are in glass and ceramics manufacture and lubricants, about 50%.	Lithium has been observed in higher than normal amounts in water and clays of southeast Oregon. Of particular interest is the McDermitt Caldera where clays are enriched in lithium, some containing 0.36% Li. U.S. Bureau of Mines is developing methods of extracting lithium from McDermitt Caldera clay.
Iron, steel and chemical industry end uses were construction 23%, transportation 19%, machinery 14%, and others 44%.	Small amounts of manganese have been produced in Oregon from pre-tertiary formations in the northwest (Baker and Grant Counties) and the southwest (Coos, Curry, Douglas, Jackson and Josephine Counties).
Electrical 64%, electrolytic production of chlorine and caustic soda 14%, mildew-proofing paint 9%, industrial and control instruments 6%, other 7%.	Mercury occurrences are widespread in Oregon and in the past have produced significant portions of domestic production. Mercury mining in Oregon has seen a pronounced cyclical activity, with mines opened up for relatively short periods during high mercury prices. Presently in an essentially dormant stage.

Mineral Commodity Summary (1984 data) Continued [1]

	U.S. Production/Consumption				
Mineral Commodity	Production in 1984	% of World Production	% Imported [2] (or exported, as noted)	Projected [3] Annual Demand Increase	Price Trends
Molybdenum	99,000,000 pounds	25%	exported	0.8%	Year-end price per pound, concentrate, f.o.b. Climax, Colorado: 1979 ($7.50); 1980 ($9.70); 1981 ($8.50); 1982 ($4.00) and 1983 ($4.00).
Nickel	7,500 short tons	less than 1%	74%	2.5%	Average price range per pound of nickel metal, N.Y.: 1979 (NA); 1980 ($2.85); 1981 ($2.67); 1982 ($2.24); 1983 ($2.20), and 1984 ($2.25).
Optical Calcite	See separate discussion in preceding text.				
Perlite	500,000 short tons	31%	4%	3%	Price (sold to expanders) per ton, f.o.b. mine: 1979 ($24.85); 1980 ($25.86); 1981 ($29.47); 1982 ($31.71); 1983 ($33.05) and 1984 ($33.00).
Potassium (K_2O equivalent)	1,600,000 metric tons	6%	74%	1.8%	Per ton F.O.B. mine: 1979 ($95); 1980 ($130); 1981 ($137); 1982 ($109); 1983 ($100) and 1984 ($110).
Pumice and Pumicite	520,000 short tons	4%	29%	2%	Average price per ton, f.o.b. mine or mill: 1979 ($4.15); 1980 ($7.86); 1981 ($8.64); 1982 ($9.01); 1983 ($9.99) and 1984 ($10.00).
Silver	44,000,000 troy ounces	11%	61%	2.2%	Average price per ounce: 1979 ($11.09); 1980 ($20.63); 1981 ($10.52); 1982 ($7.95); 1983 ($11.44) and 1984 ($8.25).
Slab Lava	See separate discussion in preceding text.				
Sodium	Short tons: (a)8,350,000 as sodium carbonate (b)530,000 as sodium sulfate	93% 27%	exported 4%	1% 1.4%	F.O.B. mine/plant per short ton: (a) 1979 ($65); 1980 ($90); 1981 ($91); 1982 ($88); 1983 ($80) and and 1984 ($70). (b) 1979 ($56); 1980 ($62); 1981 ($71); 1982 ($83); 1983 ($93) and 1984 ($90).
Tin	negligible	-	79%	1%	Per pound N.Y. market: 1979 ($7.11); 1980 ($7.73); 1981 ($6.48); 1982 ($5.87); 1983 ($6.01) and 1984 ($6.30).
Zeolites	See separate discussion in preceding text.				
Zinc	265,000 metric tons	5%	67%	2.2%	Average price per pound: 1979 (37.3¢); 1980 (37.4¢); 1981 (44.6¢); 1982 (38.5¢); 1983 (41.4¢) and 1984 (48.0¢).

[1] For most of the nonfuel mineral commodities, production, use, and trend data were obtained from U.S. Bureau of Mines, Mineral Commodity Data Summary, 1985. Unless specifically stated otherwise, Oregon data were generally dervied from the U.S. Geological Survey, Mineral and Water Resources of Oregon, 1969. These sources have been supplemented whenever possible by newer data (published or unpublished) available at BLM offices. The energy mineral information is collected from diverse industry sources as reported in trade journals.

[2] Net import reliance as a percent of apparent consumption.

[3] Through 1990 from base year 1981 (gold, silver, and zinc), 1982 (bentonite) and 1983 (beryllium, boron, chromium, cobalt, copper, diatomite, flourite, lead, lithium, manganese, mercury, molybdenum, nickel, perlite, potassium, pumice, sodium carbonate, sodium sulfate and tin).

[4] 1 flask = 76 pounds

[5] 1984 data are estimated

W = Withheld to avoid disclosing company proprietary data

Uses and percent of consumption	Occurrences in Oregon.
Machinery (35%), oil and gas industry (20%), transportation (15%), chemicals (15%), electrical (10%) and other (5%).	Several types of molybdenum occur in Oregon. Most economic potential is the disseminated deposits in eastern Oregon in Baker and Grant Counties (Blue Mountains) and Harney County (Pueblo Mountains). U.S. production is greatly depressed from a high of 150 million pounds recorded in 1980. Exports from the United States will continue to supply a major share of rest-of-world demand.
Production of stainless and alloy steel 44%, non-ferrous alloys 34%, and electroplating 18%.	Oregon has substantial tonnages of low grade nickel laterite deposits. These await favorable market conditions for eventual development. Only one producing mine, located at Riddle, Oregon, produced nickel in the U.S.; ceased operation April 1982 and did not resume production till summer of 1983.
Lightweight building construction product 69%, filter aid 17%, other 14%.	There are, presently, no producing perlite mines in Oregon. In the 1940s, perlite was mined and processed in an integrated plant near Maupin, Wasco County. Nowadays, out-of-state perlite is expanded to form lightweight material in plants located in Portland. Exploration and large scale testing occurred in perlite-deposits of Southern Lake County in 1983.
Fertilizer 95%, chemical 5%.	No production is reported in Oregon. Environments favorable for potassium in Oregon are saline waters and as k-feldspar in altered tuffaceous sediments.
Concrete aggregates and building block, 92%.	Pumice and pumicite occur in numerous Oregon locations. Large areas in central Oregon blanketed by deposits. In 1983, Bend area produced pumice which was shipped to Washington and California markets for use as lightweight aggregates. Block pumice used in cleaning grills has higher unit prices and probably can bear shipping cost across nation.
Photography 48%, electrical and electronic products 25%, sterlingware, electroplated ware, and jewelry 11%, brazing alloys and solders 5%, other 11%.	Approximately two-thirds of world silver resources are associated with copper, lead, and zinc deposits. Remaining one-third is in vein deposits in which silver is principal metal. Oregon's silver has come from vein deposits, mostly gold-silver.
(a) Glass 51%, chemicals 20%, other 29%. (b) Pulp and paper 36%, detergent 47%, other 17%.	Production of soda ash in Oregon has been limited to a few hundred tons. Principal deposits are associated with saline lakes, and playas such as Summer Lake, Lake Albert and Alkali Lake.
Can and containers 21%, electrical 18%, construction 14%, transportion 14% and other 33%.	Tin occurrence of any significance are not known in Oregon.
Galvanizing 45%, zinc base alloys 27%, brass and bronz 16%, other 12%.	Oregon's zinc production has been relatively small and has come mostly as a byproduct of copper mines.

f.o.b., was computed at $175 per ton for the thin lava and $50 per ton for the massive lava.

While volcanic flows are widespread in eastern Oregon, economic deposits of slab lavas are generally limited to the very young basaltic fields. Diamond Craters, Jordan Craters, Clarks Butte, Devils Garden, Squaw Ridge and Four Craters lava fields are known to contain slab lavas. (Diamond Craters has been withdrawn from mineral development; the others are WSAs.) These deposits probably could be developed economically and are the only known and accessible supplies in Oregon. The demand, however, has declined recently due to a slump in the building industry.

In 1978, one miner documented a sale of 324 tons of Idaho slab lava in the Oregon market.

Zeolites

Zeolites are a group of molecular-sieve minerals with great potential for varied uses. So far, however, natural zeolites only have a limited number of industrial uses. Petroleum refining, animal feed supplement, and water purifying seem to be the main uses in the U.S. at present.

Oregon has now joined the ranks of producing states. Zeolites produced from Adrian in extreme east-central Oregon are marketed as a fungicide carrier for seed potatoes, and for uses in detergent and fertilizer markets. Significant numbers of mining claims for zeolites have been staked in eastern Oregon.

Prices for zeolites are not available, but are said to range widely depending on uses and the nature and purity of the zeolite mineral involved. Judging from the large companies which have mining claims for enormous reserves of zeolites in the western states, it appears that zeolites may be used in larger quantities in future years. Other technological research is necessary to increase the usefulness of natural zeolites and, consequently, future demand for this commodity is unknown.

Cinders

Cinder deposits occur in volcanic vent areas and are extensively used in road surfacing and as light weight aggregates. In many eastern Oregon localities cinders are in demand as the principal source of low-priced road surfacing material. As low-priced commodities, cinders generally cannot be economically transported over long distances. Inplace value of cinder deposits in 1983 ranged from $.40 to $1.00 a ton. Production figures are not available, but demand is expected to increase.

Optical Calcite

Optical calcite is used as prisms for use in polarization of light. Industry has shown some interest in using optical calcite for the improvement of high technology lasers, however the projected future demand for this commodity is not known.

Optical calcite is known to occur in vein deposits in Malheur County near the Owyhee Reservoir area. Market and price data for this commodity are not available.

Limestone

Limestone is one of the most commonly used mineral commodities, and its uses are varied. Major uses are in the production of lime, cement, dimension stones, and in glass, metallurgical and chemical industries. About two-thirds of the limestone mined in the United States is used in construction, with a small amount used as an industrial filler. The supply of limestone is sufficient to meet regional needs in most areas of the country.

Economic recession has cut the annual production of limestone in the U.S. in recent years: 1980 (723); 1981 (644) and 1982 (592) million short tons. Price data is unavailable.

Limestone is known to occur in WSAs in Baker County. Major production of limestone in Oregon is attributed to Baker County for manufacture of cement. Production figures have been withheld in order not to divulge proprietary data.

Energy Minerals

Energy minerals constitute the dominant source of domestic energy consumption. For instance, the energy consumption mix for August 1983 was petroleum, 43.8%; natural gas, 19.2%; coal, 27.0%; nuclear power, 4.7%; hydroelectric power, 5.0%; and others 0.3%.

Increased energy costs due to 1973 and 1979 crude oil price hikes and the decline in the national economy have resulted in a slow rate of growth of energy consumption.

Oil: The United States is a major importer of crude oil. Its import reliance has somewhat decreased in the past years but still constitutes about one third of consumption. For November 1983, the U.S. imported 5.16 million barrels of crude oil per day which was 37.1% of the daily demand. The early 1980's glut in world oil resulted in declining oil prices (OPEC oil from $34 to $30 a barrel for Saudi crude). Prices in 1984 have continued to slip. Domestic oil and gas exploration has decreased. The Columbia Basin and high desert country in eastern Oregon are some of the frontier areas in the continental U.S. awaiting major exploration. Drilling in the Columbia Basin indicates good potential for hydrocarbon discovery.

Uranium: 1982 saw a drastic slump in uranium production in the U.S. in contrast to the 1981 production of 38 million pounds. In 1982, the U.S. produced only 26.2 million pounds of U_3O_8(uranium oxide), about one fourth of the total free world production. Domestic consumption was 20.9 million pounds and net import was 3.5 million pounds. The downward trend in uranium market activity has resulted in postponement or cancellation of most development and exploration programs. Development of Placer Amex's uranium deposit near McDermitt in southeast Oregon (13 million tons of shallow mineralization of 0.05% to 0.06% U_3O_8) continue to be on hold. At the close of the year, prices of U_3O_8per pound (in concentrates) were $27.00 in 1980, $23.50 in 1981, and $20.25 in 1982.

Thorium: Thorium is derived from the processing of monazite, an ore mineral of rare earths and yttrium. The U.S. relies wholly on imports of thorium to supply domestic needs. Thorium is used as nuclear fuel in a commercial electric generating plant and in experimental reactors. Non-energy uses for this mineral include incandescent lamp mantles, magnesium-thorium alloys, refractories, and welding rods.

From a 1978 base, the demand for nonfuel applications is anticipated to increase 7% annually through 1990. This increase is due to increased use of magnesium-thorium hardeners in the aerospace industry, thoria refractory applications, and new catalytic processes. The quantity of thorium used for nuclear energy is small when compared to other fuels.

Gas: Domestic production of natural gas in 1982 was about 18.0 trillion cubic feet according to U.S. Department of Energy statistics. The U.S. was a net importer of natural gas, with the import amounting to approximately 0.9 trillion cubic feet. Active drilling in the Columbia Basin indicates good potential for gas discovery

Coal: The National Coal Association estimates domestic hard coal production for 1983 at 780 million short tons, and U.S. exports at 79 million short tons.

Geothermal: Geothermal resource contribution to national energy consumption was relatively minor. The Geysers field in California in 1983 had electricity generation capacity of over 1200 megawatts, and another 583 megawatts under construction.

In eastern Oregon, large quantities of geothermal resources are known or believed to exist. In order to minimize the loss of heat, geothermal energy is usually used near its occurrence. In Klamath Falls, Oregon, geothermal heat has been used for space heating over a number of years. Other communities in eastern Oregon also have, and are expanding use of, geothermal resources for space heating, industrial processing and small wellhead generators.

List of Principal Preparers

While individuals have primary responsibility for preparing sections of an EIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the District and State Office levels of the Bureau both review the analysis and supply information. Contributions by individual preparers are subject to revision by other BLM specialists and by management during the internal review process.

Name	Primary Responsibility	Related Professional Experience
Volume I (Statewide EIS)		
Jerry Magee	EIS Team Leader	9 years BLM (Environmental Coordinator, Outdoor Recreation Planner, Wilderness Specialist)
Dale Bays	Economic Value and Local Income	12 years BLM (Economist)
John Booth	Economic Value and Local Income	6 ½ years BLM (Regional Economist) 7 ½ years Corps of Engineers (Regional Economist) 2 ½ years Federal Reserve Bank of San Francisco (Economist) 6 ½ years Wash. Dept. of Commerce (Economic Analyst) 5 years Wash. Tax Commission (Tax Analyst)
Dick Bonn	Water Quality, Vegetation, Wildlife	6 years BLM (Wildlife Biologist, Environmental Specialist) 11 years SCS (Biologist, Soil Conservationist)
Daniel Bowman	Cultural and Paleontological Resources, Social Conditions	7 ½ years BLM (Policy Analyst, Social Scientist, Archaeologist) 1 ½ years Corps of Engineers (Archeologist)
Mark Danley	Various Sections	4 years BLM (Outdoor Recreation Planner, Wilderness Specialist) 4 years Oregon State University (Social Researcher)
Gardner Ferry	Vegetation (Fire Relationships)	8 years BLM (Acting State Fire Management Officer, Chief, Branch of Fire Management, Fire Ecologist, Chief of Fire and Emergency Operation Section, Assistant State Fire Management Officer, 8 years BIA (Forest Manager, District Forester, Assistant District Forester)
Gerry Fullerton	Livestock Grazing	23 years BLM (Range Conservationist, Environmental Specialist, Natural Resource Specialist)
Don Geary	Wilderness Values, General Environment	19 years BLM (Wilderness Coordinator, Program Analyst, Coal Project Manager, Planning Coordinator, Area Manager, Natural Resource Specialst, Realty Specialist)
Phil Hamilton	Description of Proposed Action and Alternatives, Interrelationships, Scoping Summary	28 years BLM (Supervisory Planning and Environmental Specialist, Economist-Planner, Realty Specialist, Forester, and others)

Kris Hegdal	Energy and Mineral	4 years BLM (Geologist) 3 years USFS (Geologist) 1 ½ years Bureau of Mines (Engineering Technician)
Jim Kluge	Writer-Editor	2 years BLM (Writer-Editor) 8 years other federal agencies (Writer-Editor)
Gregg Simmons	Wood Products Harvest	10 years BLM (Environmental Coordinator, Forester)
Eric Stone	Consistency Tables, Utility Corridor Routing and Communication Facility Siting	16 years BLM (Program Analyst, Regional Planner, Natural Resource Specialist, Forester)
Ken White	Recreation Use	22 years BLM (Outdoor Recreation Planner, Realty Specialist)

Volume II (Appendices for WSAs prefixed OR-1)

Doug Troutman	Lakeville District Team Leader, Wilderness Values, Recreation Use	15 years as a Wilderness/ Recreation Specialist, Natural Resource Specialist, N.P.S. Ranger
Helen Birss	Economic Value and Local Income	3 years BLM Range Technician, 2 ½ years BLM Economist
Rick Breckel	Livestock Grazing	7 years BLM Range Conservationist
Bill Cannon	Cultural and Paleontological Resources	14 years as Archeologist
Virginia Crosby	Vegetation	7 years as Botanist
Walt Devaurs	Wildlife	12 years as Biologist
Joe Kraanbrink	Livestock Grazing	4 years as Range Conservationist
Alan Munhall	Wildlife	7 years as Biologist
Mark Sherbourne	Livestock Grazing	8 years BLM Range Conservationist
Dennis Simontacchi	Energy and Mineral Development	16 years as Geologist

Volume II (Appendices for WSAs prefixed OR-5)

Brian Cunninghame	Prineville District Team Leader	15 years as Recreation Specialist and Natural Resource Specialist
John Booth	Economic Value and Local Income	26 years as Economist (6 ½ years with BLM, 19 ½ years with other state and federal agencies.
Dennis Davis	Energy and Mineral Development	15 years as Geologist (10 years BLM, 5 years private industry.)
Wayne Elmore	Wildlife	16 years as Wildlife Biologist
Ron Halvorson	Vegetation, Livestock Grazing	9 years as Range Conservationist
Mike Henderson	Wildlife, Cultural Resources	4 years as Wildlife Biologist
Berry Phelps	Wilderness Values, Recreation Use	6 years as Wilderness Specialist, Recreation Planner, and Natural Resource Specialist

Volume II (Appendix for WSA OR-11-17)

Joe Ross	Medford District Team Leader, Water Quality, Vegetation, Economic Value and Local Income	3 years, US Forest Service (Forestry Technician, Biological Information Specialist), 5 years BLM (Outdoor Rec. Planner) 2 years, BLM (Environmental Protection Specialist)
John Booth	Economic Value and Local Income	26 years as Economist (6 ½ years with BLM, 19 ½ years with other state and federal agencies)
Art Carpenter	Wood Products	22 years as Forester (BLM)
Mark Hermeston	Energy and Mineral Development	5 years as Geologist (BLM)
Jim Renthal	Soils	7 years as Soil Scientist (BLM)

Gayle Sitter	Wildlife	6 years as Wildlife Biologist (BLM)
Fred Tomlins	Wilderness Values, Recreation Use	5 years as Recreation Planner (BLM)
Rich Whitley	Livestock Grazing, Utility Corridor Routing	4 years as Range Conservationist (BLM), 6 years as a Natural Resource Specialist (BLM)

Volume II (Appendices for WSAs OR-12-8 and OR-12-14)

Reginald Pullen	Coos Bay District Team Leader, All Sections	9 years as BLM Archeologist and Recreation Planner
Randy Wenchell	All Sections	5 years as BLM Landscape Architect, Colorado Dept. of Wildlife and private industry

Volume III (Appendices for WSAs prefixed OR-2)

Mark Hosket	Burns District Team Leader, Editing, Utility Corridor Routing	8 years as Outdoor Recreation Planner (6 years BLM; 2 years Bureau of Reclamation)
Helen Birss	Economic Value and Local Income	3 years BLM Range Technician, 2 ½ years BLM Economist
George Brown	Energy and Mineral Development	6 years as Geologist (5 years BLM, 1 year US Bureau of Mines)
Janine Clayton	Energy and Mineral Development	2 ½ years as Geologist (1 ½ years State of Oregon, Dept. of Geology & Mineral Ind., 1 year private industry)
Bruce Crespin	Cultural Resources	8 years as Archeologist (7 years BLM, 1 year California State Dept. of Parks and Recreation)
Rick Hall	Livestock Grazing	8 years as Range Conservationist
Roger Hoverman	Livestock Grazing	4 years as Range Conservationist
Marilyn Kastens	Soils	3 years as Soil Scientist
Ralph Klein	Soils	3 years as Soil Scientist; 4 years as Range Conservationist
Russell Krapf	Soils	6 years as Soils Scientist
Fred McDonald	Wilderness Values, Recreation Use	8 years as Recreation Technician and Recreation Planner
Janis Reimers	Vegetation, Editing	4 years as Range Conservationist
Guy Sheeter	Wildlife	15 years as Wildlife Biologist, 1 year as Range Conservationist
Fred Taylor	Wildlife	6 years as Wildlife Biologist
Nora Taylor	Livestock Grazing	4 years as Range Conservationist

Volume IV (Appendices for WSAs prefixed OR-3 and OR-6)

Richard Conrad	Vale District Team Leader	14 years BLM Wilderness Specialist, Outdoor Recreation Planner and District Ranger
H.Singh Ahuja	Energy and Mineral Development	4 years BLM Geologist, 3 years USGS Hydrologist 3 years private industries

Don Applegate	Wilderness Values, Recreation Use	3 years BLM Wilderness Technician
Helen Birss	Economic Value and Local Income	3 years BLM Range Technician, 2 ½ years BLM Economist
Daniel Brown	Soils	3 years SCS Soil Conservationist, 7 years BLM Soil Scientist
Michael Crouse	Wildlife	8 years EPA Aquatic Biologist, 4 years BLM Fishery Biologist
Gary Dreier	Vegetation, Livestock Grazing	8 years BLM Range Conservationist
Jean Findley	Vegetation, Livestock Grazing	8 years BLM Range Conservationist
David Hunsaker	Wilderness Values, Recreation Use	15 years BLM Recreation Specialist
Robert Kindschy	Wildlife	6 years BLM Range Conservationist 22 years BLM Wildlife Biologist
Richard Caw	Wilderness Values, Recreation Use	6 years BLM Recreation Specialist
Dwane Marti	Cultural, Wilderness, Recreation	2 years USFS Archeologist 5 years BLM Archeologist
Barry Rose	District editor	3 years BLM Public Affairs Specialist
Jon Sadowski	Wildlife	11 years BLM Wildlife Biologist, Range Conservationist
Pat Trudell	Vegetation, Livestock Grazing	1 year USFS Range Conservationist 4 years BLM Range Conservationist
Jerry Wilcox	Wild Horses	6 years BLM Range Conservationist 9 years BLM Wild Horse Specialist

Other input on various sections by:

Bob Lieurance	25 years BLM Forester, 5 years BLM Environmental Coordinator
Gerald Meyer	14 years BLM Recreation Specialist
Tom Moore	8 years BLM Range Conservationist, 4 years BLM Area Manager, 16 years BLM Assistant District Manager for Resources

Glossary

Acronyms

ACEC - Area of Critical Environmental Concern

ACMP - Area of Critical Mineral Potential

AUM - Animal Unit Month

BLM - Bureau of Land Management

CFL - Commercial Forest Land

EIS - Environmental Impact Statement

FLPMA - Federal Land Policy and Management Act of 1976

FS - Forest Service

FWS - Fish and Wildlife Service

GEM - Geology, Energy and Minerals Assessment

GRA - Geology-Energy-Mineral Resource Area

KGRA - Known Geothermal Resource Area

MFP - Management Framework Plan

NPS - National Park Service

NWPS - National Wilderness Preservation System

ORV - Off-Road Vehicle

RARE II - The second Roadless Area Review and Evaluation

RMP - Resource Management Plan

RNA - Research Natural Area

RVD - Recreation Visitor Day

SMSA - Standard Metropolitan Statistical Area

VRM - Visual Resource Management

WSA - Wilderness Study Area

Definitions

Animal Unit Month (AUM): The amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month.

Allotment Management Plan (AMP): A documented program which applies to livestock operations on the public lands, prepared in consultation, cooperation, and coordination with the permittees, lessees, or other involved affected interests.

Areas of Critical Environmental Concern (ACEC): Areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

Area of Critical Mineral Potential (ACMP): An area nominated by the public as having mineral potential that is important to the local, regional, or national economy or that could become important in the future. These nominations are used by BLM to reevaluate areas under existing or 'de facto' withdrawals (from mineral entry).

Board Feet: Units of solid wood, one foot square and one inch thick.

Candidate Species: Plant or animal species not yet officially listed but which are undergoing a status review as published in the **Federal Register** by the U.S. Fish and Wildlife Service. They are candidates for possible addition to the List of Endangered and Threatened Species. (See also Endangered Species and Threatened Species.)

Chaining: A method of vegetation manipulation consisting of dragging an anchor chain through vegetation to break off or uproot shrubs or trees.

Climax Vegetation: The natural plant community which has or would occupy a site in dynamic equilibrium with the environment and in the absence of abnormal disturbances and physical site deterioration. Generally equates with "pristine."

Commercial Forest Land (CFL): Forest land that is capable of producing merchantable timber at rates of at least 20 cubic feet per acre per year and is currently or prospectively accessible and not withdrawn from such use.

Dead-End Road: A road (see Road definition) that extends into a WSA but is excluded from the WSA by means of drawing the WSA boundary around the road.

Discovery: A term used in connection with mining claims. As stated in a legal ruling which has been upheld in many later decisions, it is "where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine . . ."

Ecological Stage: See Seral Stage.

Economic Value: As used in this EIS, refers to the contribution of a resource use on the public lands to net production. (See also Addendum 1 discussion.)

Ecosystem: A complex self-sustaining natural system which includes living and non-living components of the environment and the interactions that bind them together. Its functioning involves the circulation of matter and energy between organisms and their environment.

Endangered Species: Any species in danger of extinction throughout all or a significant portion of its range, as identified in accordance with the Endangered Species Act of 1973, as amended.

Endemic: In terms of a specific organism, the condition where the organism's natural occurrence is confined to a certain region and its distribution is relatively limited.

FLPMA: The Federal Land Policy and Management Act of 1976 (Public Law 94-579, 90 Stat. 2743, 43 USC 1701).

Forage: All browse and herbaceous foods that are available to grazing animals. It may be grazed or harvested for feeding.

Guzzler: A small, wildlife water project that utilizes a water collection system.

Habitat: All elements of an organism's environment needed to complete its life cycle through reproduction, including but not limited to food, cover, water and living space in the amounts, qualities, and locations which the organism requires to complete its life cycle.

Impact: The effect, influence, alteration, or imprint of an activity.

Impair: To diminish in value or excellence.

Impair Wilderness Suitability: Refers to activities that are considered to impair an area's suitability for preservation as wilderness - i.e., that do not satisfy the "nonimpairment critieria" set forth in Chapter I.B.2 of the Interim Management Policy (BLM, December 12, 1979).

Imprints: Signs of human activities, past or ongoing.

Inholdings: As used in this EIS, parcels of land with surface or mineral rights held privately or administered by a non-BLM agency that are entirely surrounded by WSA lands. Similar parcels adjoining or traversed by a dead-end road (see Dead-End Road) are not considered inholdings as they are excluded, along with the dead-end roads, from the WSA boundary.

Instant Study Area: A BLM primitive or natural area designated before November 1, 1975, subject to wilderness review under section 603(a) of FLPMA.

Known Geothermal Resource Area (KGRA): An area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary of the Interior, engender a belief in persons who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose. (From Code of Federal Regulations (Title 43, Part 1000 to 3999, Pg. 436), Office of Federal Register, Washington D.C. 1981.)

Leasable Minerals: Those minerals subject to lease by the Federal Government. Includes oil and gas, coal, geothermal, phosphate, sodium, potash, and oil shale.

Local Personal Income: As used in this EIS, refers to income to people living within the region that is derived from use of the public lands. (See also Addendum 1.)

Locatable Minerals: Minerals subject to disposal and development through the Mining Law of 1872 (as amended). Generally includes metallic minerals such as gold and silver and other materials not subject to lease or sale.

Manageability: With respect to wilderness, the capability of an area to be effectively managed to preserve its wilderness character.

Management Framework Plan (MFP): Land use plan for public lands that provides a set of goals, objectives, and constraints for a specific planning unit to guide the development of detailed plans for the management of each resource. The planning process is divided into three steps. Specialists prepare management recommendations for their respective resources in step one. The manager, through a conflict resolution process, develops a proposed plan from the recommendations in step two. The final decision to adopt a plan is made in step three.

MFP Amendment: An amendment to a Management Framework Plan is initiated by the need to consider monitoring and evaluation findings, new data, or new or revised policy, a change in circumstances, or an applicant's proposed action which may result in a significant change in a portion of the approved plan.

Mineral Entry: The right to enter the public lands (under the administration of the BLM) to search for minerals and to claim or lease such minerals under the mining and mineral leasing laws and regulations.

Mineral Potential Classification: A classification system used to indicate geologic favorability, or potential for occurrence, for various energy and mineral resources. The system rates the commodities as having low (1 or 2), moderate or medium (3), or high (4) favorability and applies a confidence rating (from A, lowest to D, highest level of confidence) based on the amount and quality of information and evidence available in determining favorability.

Mortality Salvage: Removal of individual trees killed or injured by fire, insects, disease, etc., and the removal of those trees likely to die prior to final harvest cut so as to utilize merchantable material.

Motorized Equipment: Any machine activated by nonliving power source except small battery-powered, handcarried devices such as flashlights, shavers, Geiger counters, and cameras.

Motor Vehicle: Any vehicle which is self-propelled or any vehicle which is propelled by electric power obtained from batteries.

Multiple Use: "...the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output." (From section 103, FLPMA.)

Naturalness: Refers to an area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." (From section 2(c), Wilderness Act.)

Nonstructural Projects: Livestock and wildlife projects that do not involve construction of facilities. These projects primarily involve land and vegetative treatments, such as chaining, burning, seeding and spraying.

Nonsuitable for Preservation as Wilderness: Refers to a recommendation that certain Federal lands satisfy the definition of wilderness in the Wilderness Act but have been found not to be appropriate for designation as wilderness on the basis of an analysis of the existing and potential uses of the land.

Old Growth Timber: A stand of trees that is past full maturity and showing signs of decadence, usually 200 year age class or older (large trees, snags and down logs, multilayered canopy, many species).

Off-Road Vehicle (ORV): Any motorized vehicle designated for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

Outstanding: 1. standing out among others of its kind; conspicuous; prominent. 2. superior to others of its kind; distinguished; excellent.

Outstanding Natural Area: An area of unusual natural characteristics where management of recreation activities is necessary to preserve those characteristics.

Patented Mining Claim: A claim on which title has passed from the Federal Government to the mining claimant under the mining laws.

Planning Area: The area for which resource management plans are prepared and maintained. In most instances, it is the same as the resource area, which is a geographic portion of a BLM district, under supervision of an area manager.

Planning Criteria: The factors used to guide development of the resource management plan, or revision, to ensure that it is tailored to the issues previously identified and to ensure that unnecessary data collection and analyses are avoided. Planning criteria are developed to guide the collection and use of inventory data and information, the analysis of the management situation, the design and formulation of alternatives, the estimation of the effects of alternatives, the evaluation of alternatives, and the selection of the preferred alternative.

Plants of Special Interest: As used in this EIS, refers to plants federally listed as threatened or endangered, candidates for such federal listing, and plants on lists 1 and 2 of the Oregon Natural Heritage Plan's "Rare, Threatened, and Endangered Plants and Animals of Oregon."

Population Center: A Standard Metropolitan Statistical Area (SMSA) which has a population of 100,000 or greater. An SMSA is a county which contains at least one city of 50,000 inhabitants or more plus as many adjacent counties as are metropolitan in character and are socially integrated with that central city or cities.

Post-FLPMA: The period of time after the enactment of the Federal Land Policy and Management Act (October 21, 1976). Pre-FLPMA: On or before October 21, 1976.

Preliminary Wilderness Recommendation: Refers to a wilderness recommendation at any stage prior to the time when the Secretary of the Interior reports his recommendation to the President. Until the Secretary acts, the recommendation is "preliminary" because it is subject to change during administrative review.

Primitive Area: A designation used by the BLM for an area that is composed of natural, undeveloped lands that are essentially unaffected by civilization and located where the natural environment can be preserved by management of recreation activities and exclusion of additional roads and commercial development.

Primitive and Unconfined Recreation: Nonmotorized and nondeveloped types of outdoor recreational activities.

Public Lands: Any land and interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except (1) lands located on the Outer Continental Shelf and (2) lands held for the benefit of Indians, Aleuts, and Eskimos.

Public Land Order: An order creating, continuing (extending), modifying, or revoking a withdrawal, and signed by an appointed, Senate-confirmed official of the Office of the Secretary of the Interior.

Range Improvement: Any activity on or relating to rangelands designed to improve production of forage, change vegetation composition, control pattern of use, provide water, stabilize soil and water conditions, and enhance habitat for livestock, fish, wildlife, and wild horses and burros.

Recreation Visitor Day (RVD): A 12-hour period spent in recreation activities by one or more individuals in a public land area. The time may be spent, for example, by one individual for 12 hours or 3 individuals for 4 hours each. This unit helps to calculate recreation use.

Research Natural Area (RNA): A naturally occurring physical or biological unit where natural conditions are maintained insofar as possible. Further, the natural features are preserved for research and educational purposes. The features to be preserved may be important or unique ecosystems, habitats, or organisms, and may be terrestrial, freshwater, or marine.

Resource Management Plan (RMP): The basic decision document of BLM's resource management planning process, used to establish allocation and coordination among uses for the various resources within a Resource Area. An RMP is a "land-use plan" prescribed by Section 202 of the Federal Land Policy and Management Act. The RMP regulations appear at 43 CFR 1601. (Refer to definition of "Management Framework Plan".)

Riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally used to refer to plants of all types that grow along streams or around springs.

Road: A vehicle route which has been improved and maintained by mechanical means to ensure relatively regular and continuous use.

Roadless: For the purpose of the wilderness review program, this refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

Words and phrases used in the above definition of "roadless" are defined as follows:

1.Improved and maintained: Actions taken physically by man to keep the road open to vehicular traffic. "Improved" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.

2. Mechanical means: Use of hand or power machinery or tools.

3. Relatively regular and continuous use: Vehicular use which has occurred and will continue to occur on a relatively regular bases. Examples are: Access roads for equipment to maintain a stock water tank or other established water sources; access roads to maintained recreation sites or facilities; or access roads to mining claims.

Scoping Session: An early and open process for determining the significant issues related to a proposed action which are to be addressed in the environmental impact statement.

Segregation: Any action such as a withdrawal or allowed application (exchange) that suspends the operation of the general public land laws. To separate or set apart; to remove lands from the operation of part or all of the public land and mineral laws.

Sensitive Species: Those species that have appeared in the **Federal Register** as proposed for classification and are under consideration for official listing as endangered or threatened species, that are on an official State list, or that are recognized by the State Director as needing special management to prevent their being placed on Federal or State lists.

Seral (Successional) Stage: A stage of ecological condition based on the differences between the present plant community and climax vegetation, the relatively stable, final stage in plant succession. Each stage is defined as follows:

Early Seral - 0-25% of the present plant community is climax vegetation.
Mid Seral - 26-50% of the present plant community is climax vegetation.
Late Seral - 51-75% of the present plant community is climax vegetation.
Climax - 76-100% of the present plant community is climax vegetation.

Solitude: 1. The state of being along or remote from habitations; isolation. 2. a lonely, unfrequented, or secluded place.

Special Features: Features that may be present in an area under consideration for wilderness, such as ecological, geological, or other features of scientific, educational, scenic, or historical value. They are not required for wilderness designation, but their presence will enhance an area's wilderness quality.

Split Estate: Land ownership status whereby the surface rights were held by one individual or entity and the subsurface rights by another. As used in this EIS, split estate lands are those lands in which the surface, but not the minerals, are federally owned.

Standard Metropolitan Statistical Area (SMSA): See definition under "Population Center."

Strategic and Critical Minerals: Materials needed to supply the military, industrial, and essential civilian needs of the United States during a national defense emergency. These materials are not found or produced in this country in sufficient quantities to meet such needs.

Structural Projects: Projects involving structural development (i.e., fencelines, pipelines, troughs, guzzlers, and wells) to enhance conditions for livestock, wildlife, fish, or wild horses and burros.

Substantially Unnoticeable: Refers to something that either is so insignificant as to be only a very minor feature of the overall area or is not distinctly recognizable by the average visitor as being manmade or man-caused because of age, weathering, or biological change. An example of the first would be a few minor dams or abandoned mine buildings that are widely scattered over a large area, so that they are an inconspicuous part of the scene. Serious intrusions of this kind, or many of them, may preclude inclusion of the land in a wilderness study area. An example of the second would be an old juniper control project that has grown up to a natural appearance, the old fallen trees largely decomposed.

Suitable for Preservation as Wilderness: Refers to a recommendation that certain Federal lands satisfy the definition of wilderness in the Wilderness Act and have been found appropriate for designation as wilderness on the basis of an analysis of the existing and potential uses of the land.

Thousand Board Feet (Mbf): See Board Feet.

Threatened Species: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the **Federal Register** by the Secretary of the Interior as a threatened species. Also includes species categorized as rare, very rare, or depleted.

Valid Mining Claim: A mining claim on which a discovery has been made. (See "discovery.")

Vegetation Manipulation: As used in this EIS, refers to seeding and brush control projects for livestock and wildlife.

Visual Resource Management (VRM) Classes: A BLM classification system containing specific objectives for maintaining or enhancing visual resources, including the kinds of structures and modifications acceptable to meet established visual goals.

Way: A vehicle route which has not been improved and maintained by mechanical means to ensure relatively regular and continuous use.

Wilderness Area: An area formally designated by Act of Congress as part of the National Wilderness Preservation System.

Wilderness Characteristics: Key characteristics of a wilderness listed in section 2(c) of the Wilderness Act of 1964 and used by BLM in its wilderness inventory. These characteristics include size, naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive or unconfined recreation, and special features.

Wilderness Management: The management of lands which have been designated by Act of Congress as wilderness areas.

Wilderness Recommendations: A recommendation by the Bureau of Land Management, the Secretary of the Interior, or the President, with respect to an area's suitability or nonsuitability for preservation as wilderness.

Wilderness Reporting: The process of preparing the reports containing wilderness recommendations on wilderness study areas and transmitting those reports to the Secretary of the Interior, the President, and Congress.

Wilderness Review: the term used to cover the entire wilderness inventory, study, and reporting phases of the wilderness program of the Bureau of Land Management.

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

Wilderness Values: See Wilderness Characteristics.

Wildlife Habitat Improvement: Any procedure or activity designed to maintain or improve acquatic or terrestrial habitat, including but not limited to seeding and other methods of vegetative management, water development, fence construction and/or modification, and installation of in-stream structures.

Withdrawal: Removal, or withholding, or public lands by statute, or Secretarial order, from operation of some or all of the public land laws ("surface", mining and/or mineral leasing laws).

References

Aikens, C. Melvin. 1984. The Archaeology of Oregon. Oregon State Office, Bureau of Land Management, Portland, Oregon.

Bailey, Robert G. 1976. Ecoregions of the United States. U. S. Department of Agriculture, Forest Service.

Boreson, Keo; Ula Moody and Kelly Murphey. 1979. Cultural Resources Overview for the Bureau of Land Management, Vale District, Oregon. Volume I. Cultural Resources Consultants, Inc., Sandpoint, Idaho.

Bright, Ruth McGilvra. n.d. Prehistory and History of the Harney Area: A Cultural Resources Overview. Oregon State Office, U. S. Department of the Interior. Bureau of Land Management.

Cressman, Luther S. 1977. Prehistory of the Far West: Homes of Vanished Peoples. University of Utah Press. Salt Lake City, Utah.

Deacon, James E., Gail Kobetich, James P. Williams, Salvador Contreras, et al., Endangered Species Committee of the American Fisheries Society. 1979. Fisheries of the North American Endangered, Threatened, or of Special Concern: 1979. Fisheries, Volume 4, No. 2.

Gehr, Elliott, John R. Nelson and Roger A. Walke. 1978. Cultural Resources Overview: Ironside EIS Area. Pro-Lysts, Inc.. Eugene, Oregon.

Kidner, Ron, Kirk Duffin, and Guy Tanaka. 1982. Profile 2: A Program to Selectively Search and List Information on Wilderness Diversity. Shoshone, Idaho.

Küchler, A.W. 1966. Potential Natural Vegetation of the United States. U. S. Department of the Interior, Geological Survey.

National Geographic Special Report. 1981. Energy. February 1981, 115 pp.

Oregon Department of Environmental Quality. 1980. Oregon Administrative Rules, Chapter 340, Division 41, DEQ Water Quality Standards. Portland, Oregon.

--1976. Proposed Water Quality Management Plans for Goose and Summer Lakes Basin, John Day River Basin, Klamath Basin, Malheur Lake Basin, and Malheur River Basin (each plan consists of two volumes: text and appendices).

Oregon Department of Fish and Wildlife. 1983. Oregon Pronghorn Study (Draft). Wildlife Research Report Number 12. Portland, Oregon.

--1981. Mortality of Mule Deer Fawns in Southeastern Oregon, 1968-1979. Wildlife Research Report Number 10. Portland, Oregon.

--1977. Oregon's Threatened or Endangered Wildlife. Portland, Oregon.

Oregon Natural Heritage Plan. 1981. Natural Heritage Advisory Council to the State Land Board. State of Oregon.

Savage, D.E. 1969. The Relationship of Sage Grouse to Upland Meadows in Nevada. Nevada Cooperative Wildlife Research, Reno, Nevada.

Thomas, J. W., Maser, C., and J. E. Rodiek. 1979. Wildlife Habitats in Managed Rangelands--the Great Basin of Southeastern Oregon, Riparian Zones. U. S. Department of Agriculture. Forest Service, Pacific Northwest Forest and Range Experiment Station. Portland, Oregon.

Thomas, J. W. Technical Editor. 1979. Wildlife Habitats in Managed Forests--the Blue Mountains of Oregon and Washington. U. S. Department of Agriculture. Forest Service, Agriculture Handbook No. 553.

Toepel, Kathryn Anne and S. D. Beckham. 1978. Cultural Resource Overview of the Brothers EIS Area, Prineville District, Oregon. Department of Anthropology, University of Oregon. Eugene, Oregon.

Toepel, Kathryn Anne, W. F. Willingham and Rick Minor. 1979. Cultural Resource Overview of BLM Lands in North-Central Oregon. Department of Anthropology, University of Oregon. Eugene, Oregon.

United States Congress. 1980. Grazing in National Forest Wilderness Areas. House of Representatives Report Number 96-1126.

U. S. Department of Agriculture. Forest Service. 1984. Regional Guide for the Pacific Northwest Region. Pacific Northwest Regional Office, May 1984, pp. 2-27.

--1982. IMPLAN: An Input-Output Analysis System for Forest Service Planning.

--1978. Ecosystems of the United States. RARE II Map B.

U. S. Department of Commerce. Bureau of Census. 1981. Census of Population: 1980. Population Counts. U. S. Government Printing Office. Washington, D. C.

U. S. Department of Energy. 1983. Energy Projections to the Year 2010. Office of Policy, Planning, and Analysis, October 1983, 28pp.

U. S. Department of the Interior, Bureau of Land Management. 1983. Baker Management Framework Plan Amendment. Vale District. Vale, Oregon.

--1983. High Desert Management Framework Plan Amendment. Lakeview District. Lakeview, Oregon.

--1983. Jackson-Klamath Management Framework Plan Amendment. Medford District. Medford, Oregon.

--1983. John Day Management Framework Plan Amendment. Prineville District. Prineville, Oregon.

--1983. John Day River Management Framework Plan Amendment. Prineville District. Prineville, Oregon.

--1983. South Coast-Curry Management Framework Plan Amendment. Coos Bay District. Coos Bay, Oregon.

--1983. Warner Lakes Management Framework Plan Amendment. Lakeview District. Lakeview, Oregon.

--1982. Andrews Management Framework Plan. Burns District. Burns, Oregon.

--1982. Brothers Management Framework Plan. Prineville District. Prineville, Oregon.

--1982. Northern Malheur Management Framework Plan Amendment. Vale District. Vale, Oregon.

--1982. Southern Malheur Management Framework Plan. Vale District. Vale, Oregon.

--1982. Wilderness Study Policy: Policies, Criteria, and Guidelines for Conducting Wilderness Studies on Public Lands. 47 FR 5098. Washington, D.C.

--1981. Wilderness Management Policy. Washington, D.C.

--1981. Stateline Intensive Wilderness Inventory Final Decisions: Oregon-Idaho-Nevada-Utah. November 1981.

--1980. Wilderness Inventory--Oregon and Washington: Final Intensive Inventory Decisions. November 1980.

--1980. Wilderness Review--Intensive Inventory: Final Decisions on Thirty Selected Units in Southeast Oregon and Proposed Decisions on Other Intensively Inventoried Units in Oregon and Washington. March 1980.

--1980. Final Decisions on the Intensive Wilderness Inventory of Public Lands Along the Proposed Route of the Alaska Natural Gas Transportation System. February 1980.

--1979. Interim Management Policy and Guidelines for Lands Under Wilderness Review. Washington, D.C.

U. S. Department of the Interior, Bureau of Mines. 1985. Mineral Commodity Summaries.

U. S. Deparment of the Interior, Geological Survey. 1973. United States Mineral Resources. Edited by D. A. Brobst and W. P. Pratt. USGS Professional Paper 820. 722 pp.

U. S. Office of Management and Budget. 1980. Standard Metropolitan Statistical Areas. Revised edition.

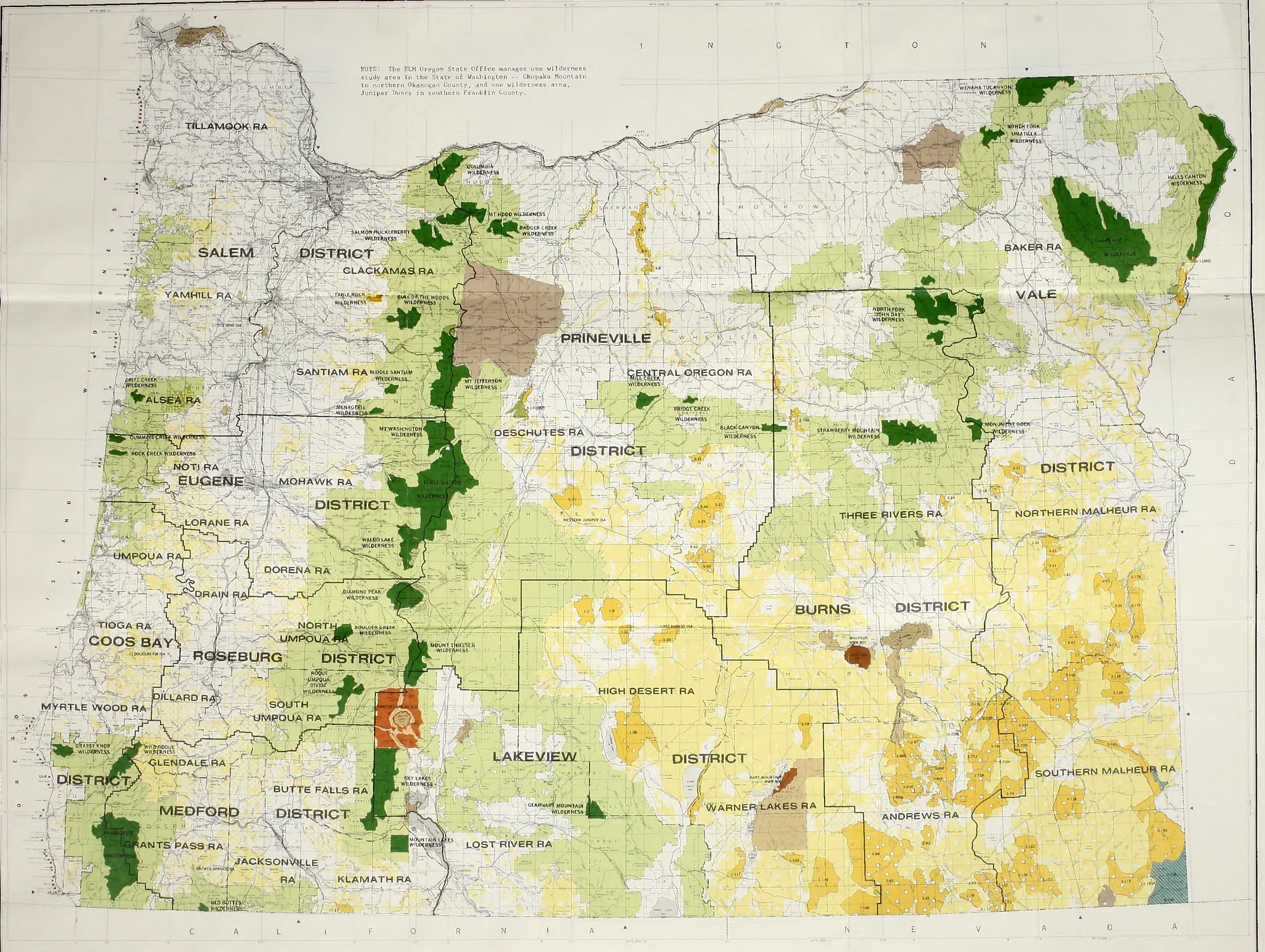
Western Utility Group. 1980. Western Regional Corridor Study. Pacific Power & Light Company. Portland, Oregon.

Wilmont, Richard L. 1974. A Genetic Study of the Redband Trout (Salmo sp.). Ph.D. Dissertation. Oregon State University. Corvallis, Oregon. 58 pp.

Index

Page

Access to Private Land . . . 14, 22, 24, 58, 61, 89, 93, 95
Archaeology . . . (See Cultural Resources)
Assumptions . . . 64
Communication Facilities . . . iv, 33, 35, 82
Cultural Resources . . . iv, 39, 57, 58, 66, 83, 84, 118
Economic Value . . . v, 13, 58, 61, 80, 85, 89, 101, 119
Energy and Mineral Development . . . iii, 13, 45, 46, 65, 73, 75, 87, 90, 92, 103, 120
Energy Commodities . . . 75, 103
Energy Minerals (see also Energy Commodities) . . . 51, 75, 103, 110, 111
Issues . . . 12, 92
Livestock Grazing . . . iv, 13, 17, 21, 23, 24, 29, 53, 58, 64, 72, 77, 79, 80, 85, 92, 101, 120
Local Personal Income . . . v, 13, 58, 61, 80, 85, 87, 89, 101, 120
Mineral Potential Classifications . . . 46, 48, 120, 121, 123
Non-Federal Lands . . . 22, 89
Paleontological Resources (or Values) . . . iv, 57, 58, 66, 83
Power Sites . . . 29
Private Lands (see also Non-Federal Lands) . . . 14, 22, 24, 29, 61, 90, 93, 119
Recreation Use . . . v, 13, 58, 66, 84, 85, 87, 90, 92, 94, 96
Social Conditions . . . v, 61
Split Estate Lands (see also Non-Federal Lands) . . . 24, 87, 93, 96, 122
Threatened and Endangered Species . . . 17, 22, 38, 53, 77, 78, 79, 93, 94, 95, 97, 118, 119, 121, 122, 123
Timber Harvest (see also Wood Products) . . . iv, 13, 57, 61, 73, 77, 78, 79, 83, 85, 90, 92, 93
Utility Corridors . . . iv, 13, 25, 33, 55, 73, 82
Vegetation . . . iv, 13, 36, 37, 38, 39, 44, 45, 65, 66, 67, 75, 76, 77, 78, 92, 94, 95
Water Power and Storage . . . 29
Water Quality . . . iv, 51, 75
Wilderness Values . . . iii, 13, 37, 38, 39, 44, 45, 65, 66, 67, 70, 71, 72, 73, 74, 75, 123
Wild Horses . . . 22, 53, 95, 121, 123
Wildlife . . . iv, 14, 25, 30, 31, 32, 36, 38, 39, 51, 52, 53, 73, 77, 78, 79, 90, 93, 94, 95, 97, 118, 119, 120, 121, 123, 124
Wood Products . . . iv, 57, 58, 83, 90



NOTE: The BLM Oregon State Office manages one wilderness study area in the State of Washington -- Chopaka Mountain in northern Okanogan County, and one wilderness area, Juniper Dunes in southern Franklin County.

Oregon Wilderness Study Areas

Lakeview District	
OR-1-2	Devils Garden Lava Bed
OR-1-3	Squaw Ridge Lava Bed
OR-1-22	Four Craters Lava Bed
OR-1-24	Sand Dunes
OR-1-58	Diablo Mountain
OR-1-78	Orejana Canyon
OR-1-101	Abert Rim
OR-1-117	Fish Creek Rim
OR-1-132	Guano Creek
OR-1-139	Spaulding
OR-1-146	Hawk Mountain

Burns District	
OR-2-14	Malheur River-Bluebucket Creek
OR-2-23L	Stonehouse
OR-2-23M	Lower Stonehouse
OR-2-72C	Sheepshead Mountains
OR-2-72D	Wildcat Canyon
OR-2-72F	Heath Lake
OR-2-72I	Table Mountain
OR-2-72J	West Peak
OR-2-73A	East Alvord
OR-2-73H	Winter Range
OR-2-74	Alvord Desert
OR-2-77	Mahogany Ridge
OR-2-78	Red Mountain
OR-2-81	Pueblo Mountains
OR-2-82	Rincon
OR-2-83	Alvord Peak
OR-2-84	Basque Hills
OR-2-85F	High Steens
OR-2-85G	South Fork of the Donner und Blitzen River
OR-2-85H	Home Creek
OR-2-86E	Blitzen River
OR-2-86F	Little Blitzen Gorge
OR-2-87	Bridge Creek
OR-2-103	Aldrich Mountain

Vale District	
OR-3-18	Castle Rock
OR-3-27	Beaver Dam Creek
OR-3-31	Camp Creek
OR-3-32	Cottonwood Creek
OR-3-33	Gold Creek
OR-3-35	Sperry Creek
OR-3-47	Cedar Mountain
OR-3-53	Dry Creek
OR-3-56	Dry Creek Buttes
OR-3-59	Owyhee Break
OR-3-73	Blue Canyon
OR-3-75	Slocum Creek
OR-3-77A	Honeycombs
OR-3-77B	Wild Horse Basin
OR-3-110	Lower Owyhee Canyon
OR-3-111	Saddle Butte
OR-3-114	Palomino Hills
OR-3-118	Bowden Hills
OR-3-120	Clarks Butte
OR-3-128	Jordan Craters
OR-3-152	Willow Creek
OR-3-153	Disaster Peak
OR-3-156	Fifteen Mile Creek
OR-3-157	Oregon Canyon
OR-3-162	Twelve Mile Creek
OR-3-173	Upper West Little Owyhee
OR-3-195	Owyhee Canyon
OR-6-1	McGraw Creek
OR-6-2	Homestead
OR-6-3	Sheep Mountain

Prineville District	
OR-5-1	Thirtymile
OR-5-6	Lower John Day
OR-5-8	North Pole Ridge
OR-5-9	Spring Basin
OR-5-14	Steelhead Falls
OR-5-21	Badlands
OR-5-31	North Fork
OR-5-33	South Fork
OR-5-34	Sand Hollow
OR-5-35	Gerry Mountain
OR-5-42	Hampton Butte
OR-5-43	Cougar Well

Medford District	
OR-11-17	Soda Mountain

Coos Bay District	
OR-12-8	North Sisters Rock
OR-12-14	Zwagg Island

LEGEND

	BLM	USFS	NPS	FWS
Designated Wilderness or Primitive Area	■	■		■
Administratively Endorsed as Suitable (prior to 5/83)			■	■
Wilderness Study Area (WSA) or USFS CDWSA*	■	■		
Other Lands Under Agency Administration	■	■	■	■
BLM Non WSA's Under Appeal/Remand		▨		
Indian Reservations		■		

*Congressionally Designated Wilderness Study Areas

Note 1: In national forests, this map shows only Congressionally designated wilderness study areas and designated wilderness.

Note 2: On BLM WSA's, the notation "(202)" following the identification number indicates that the lands are being considered for wilderness under Section 202 of the Federal Land Policy and Management Act of 1976.

MAP 1
LOCATION

NOTE: This map shows 3 WSAs not addressed in this EIS: Owyhee Canyon (OR-3-195), Steel head Falls (OR-5-14), and McGraw Creek (OR-6-1). See Interrelationships section for further details.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

STATE OF OREGON
WILDERNESS STATUS MAP

MAY – 1984

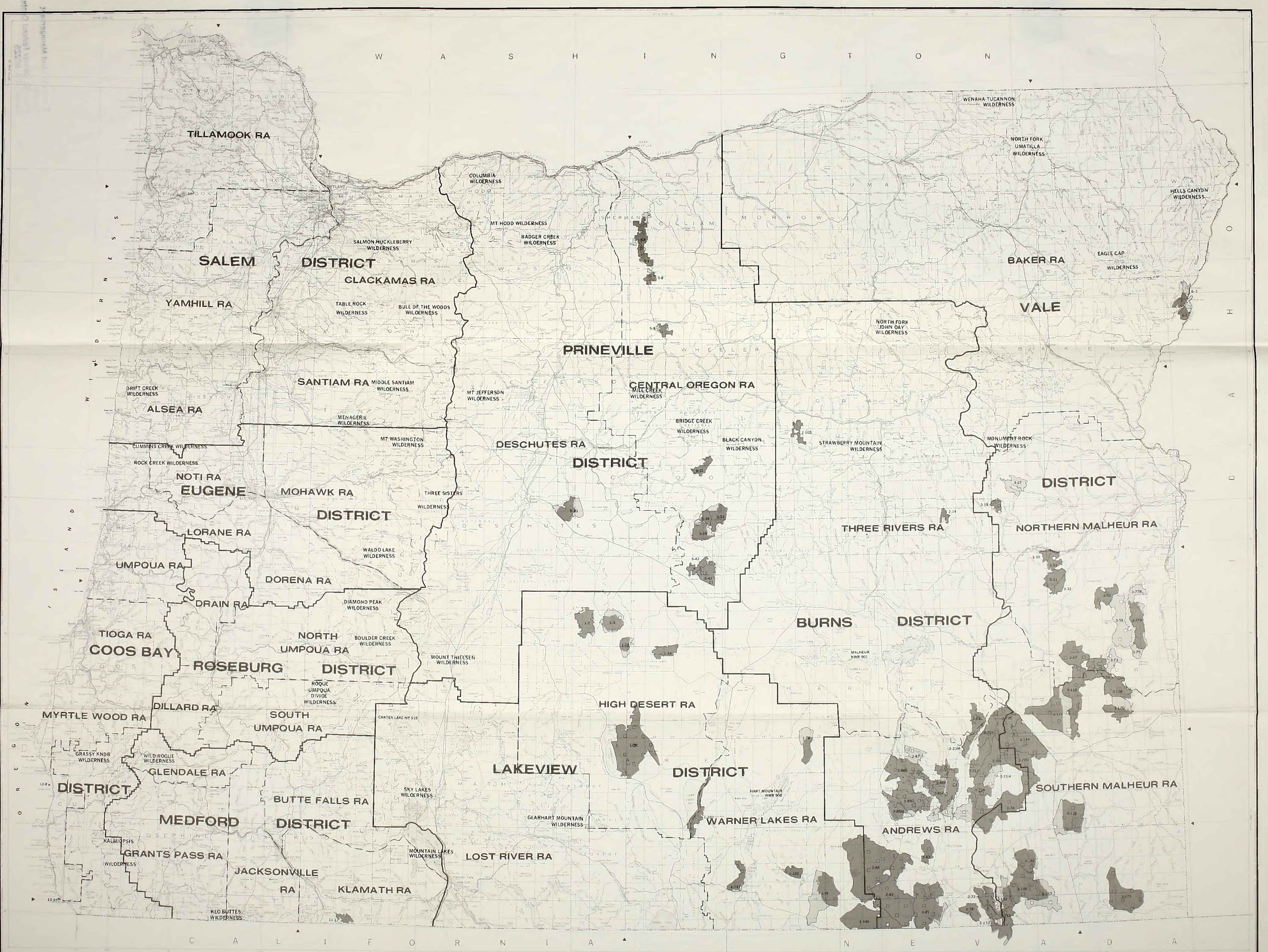
Scale 1:1,000,000

BASE MAP BY U.S. GEOLOGICAL SURVEY

Legend

- ■ State capital
- • County seat
- . City, town, or village
- ✕ Scheduled service airport
- ▭ Built up area shown for towns over 5,000 population
- ▶ Township and Range Locater

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225



LEGEND

▢ WSA Under Study in this EIS

▨ Area Recommended Suitable for Wilderness Designation

Note: WSA-specific maps are located in each appendix

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

BASE MAP BY U.S. GEOLOGICAL SURVEY

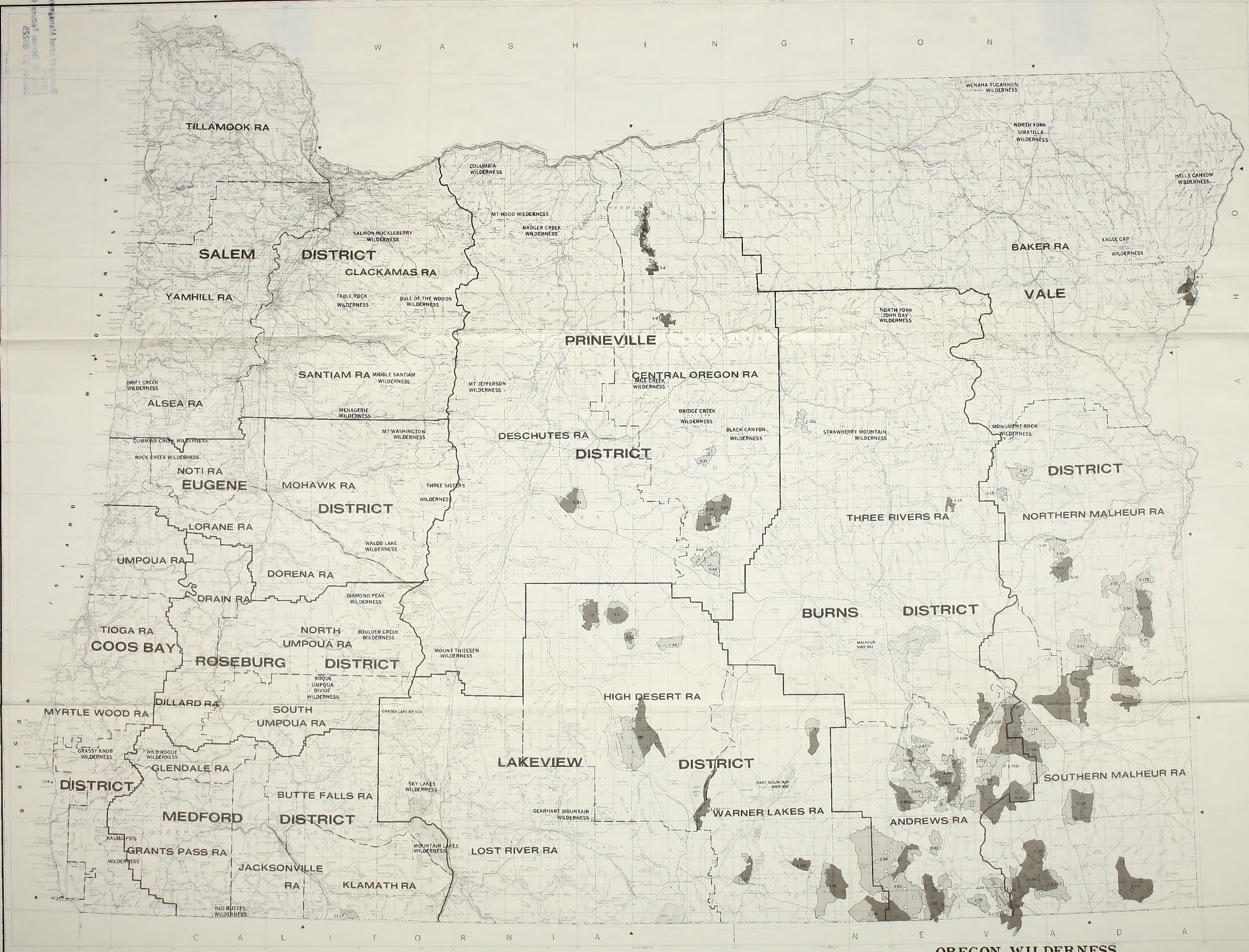
OREGON WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

WILDERNESS EMPHASIS ALTERNATIVE

1985

Scale 1:1,000,000
1 inch equals Approximately 16 miles

MAP 2



LEGEND

▢ WSA Under Study in this EIS

▨ Area Recommended Suitable for Wilderness Designation

Note: WSA-specific maps are located in each appendix

OREGON WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

CONFLICT RESOLUTION EMPHASIS ALTERNATIVE

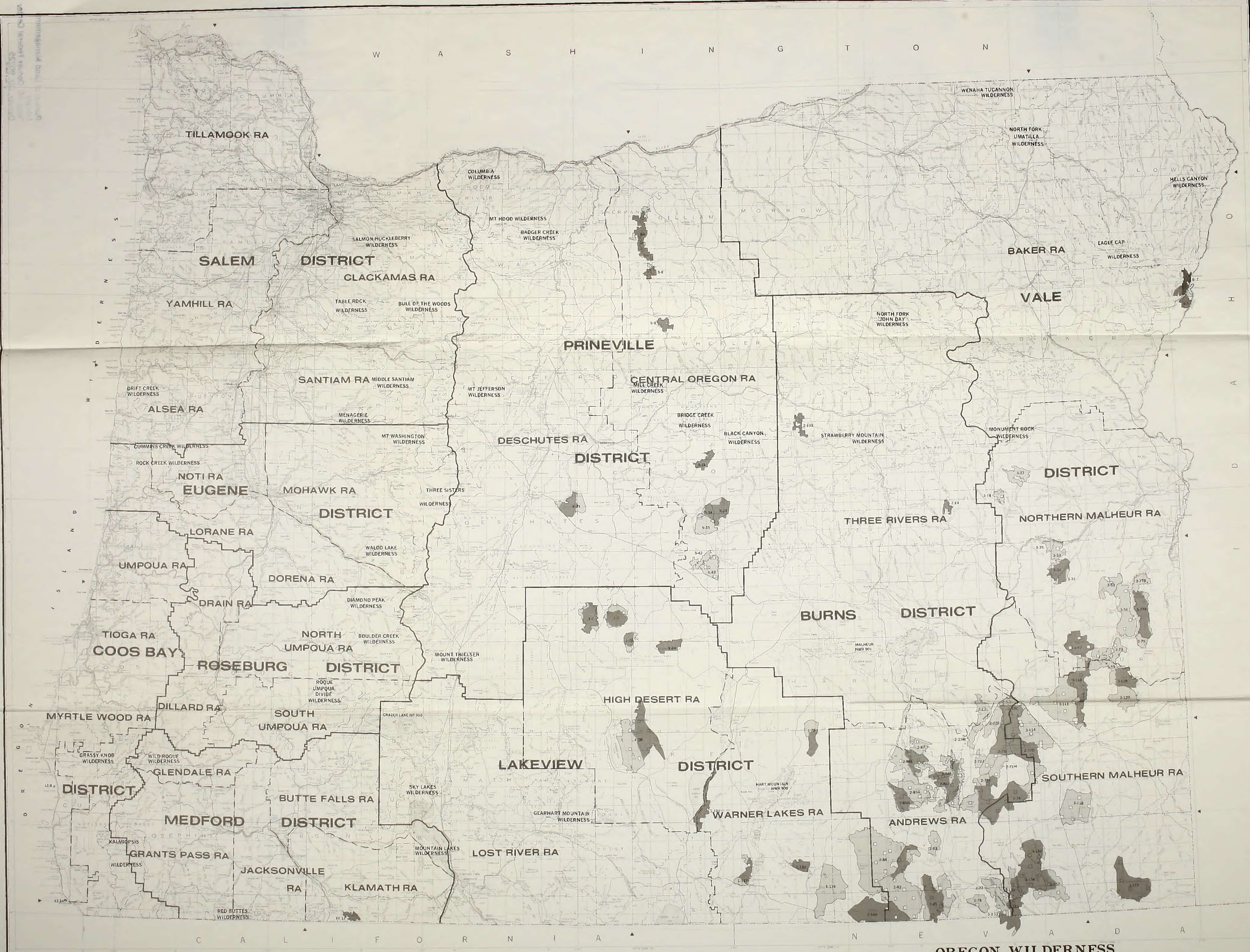
1985

Scale 1:1,000,000
1 inch equals Approximately 16 miles

MAP 3

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

BASE MAP BY U.S. GEOLOGICAL SURVEY



LEGEND

▢ WSA Under Study in this EIS

▨ Araa Racommended Suitable for Wilderness Designation

Note: WSA-specific maps are located in each appendix

BASE MAP BY U.S. GEOLOGICAL SURVEY

OREGON WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

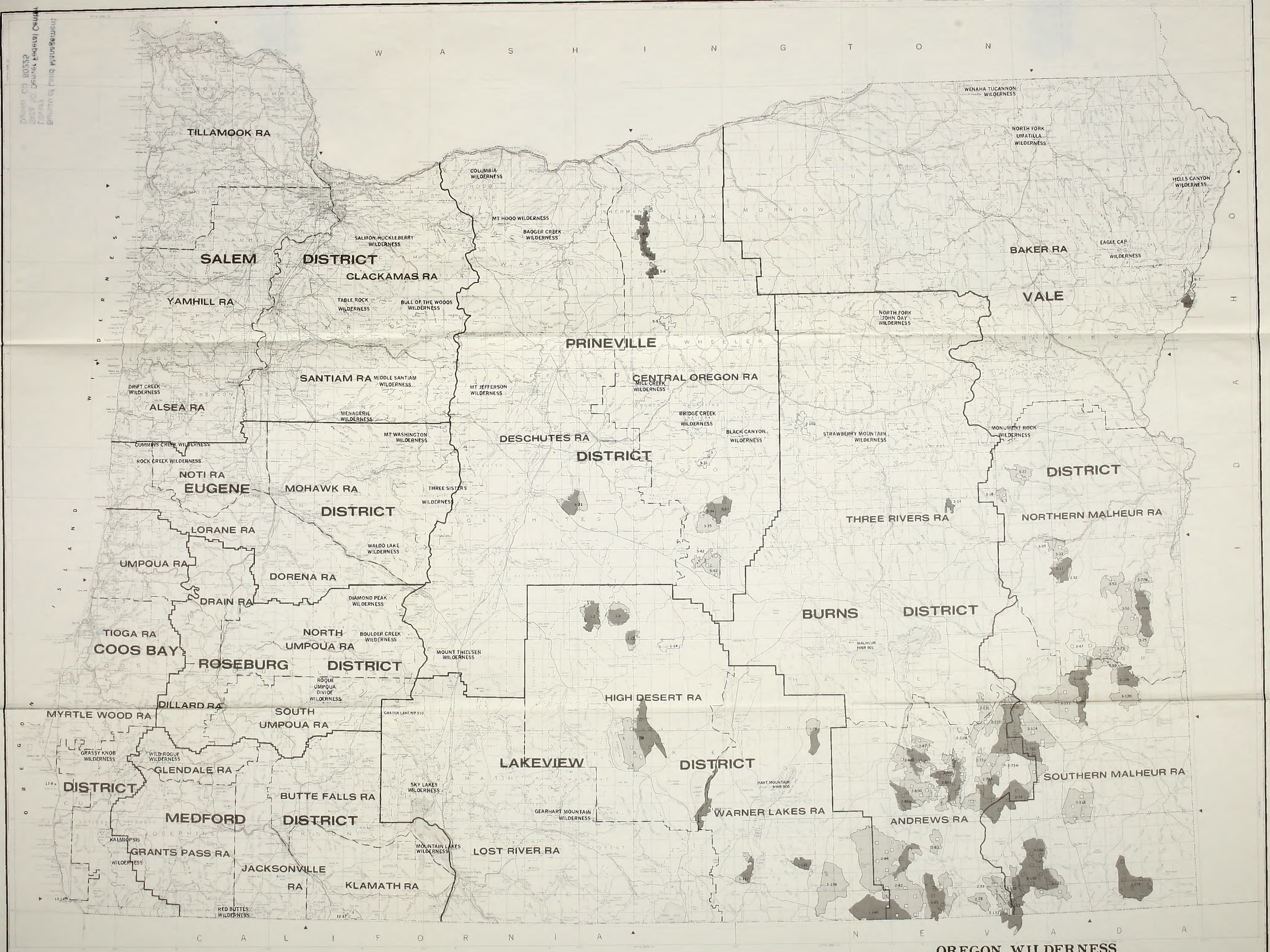
ECOSYSTEM DIVERSITY EMPHASIS ALTERNATIVE

1985

Scale 1:1,000,000

MAP 4

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT



LEGEND

▨ WSA Under Study in this EIS

■ Area Recommended Suitable for Wilderness Designation

Note: WSA-specific maps are located in each appendix

BASE MAP BY U.S. GEOLOGICAL SURVEY

OREGON WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

PROPOSED ACTION

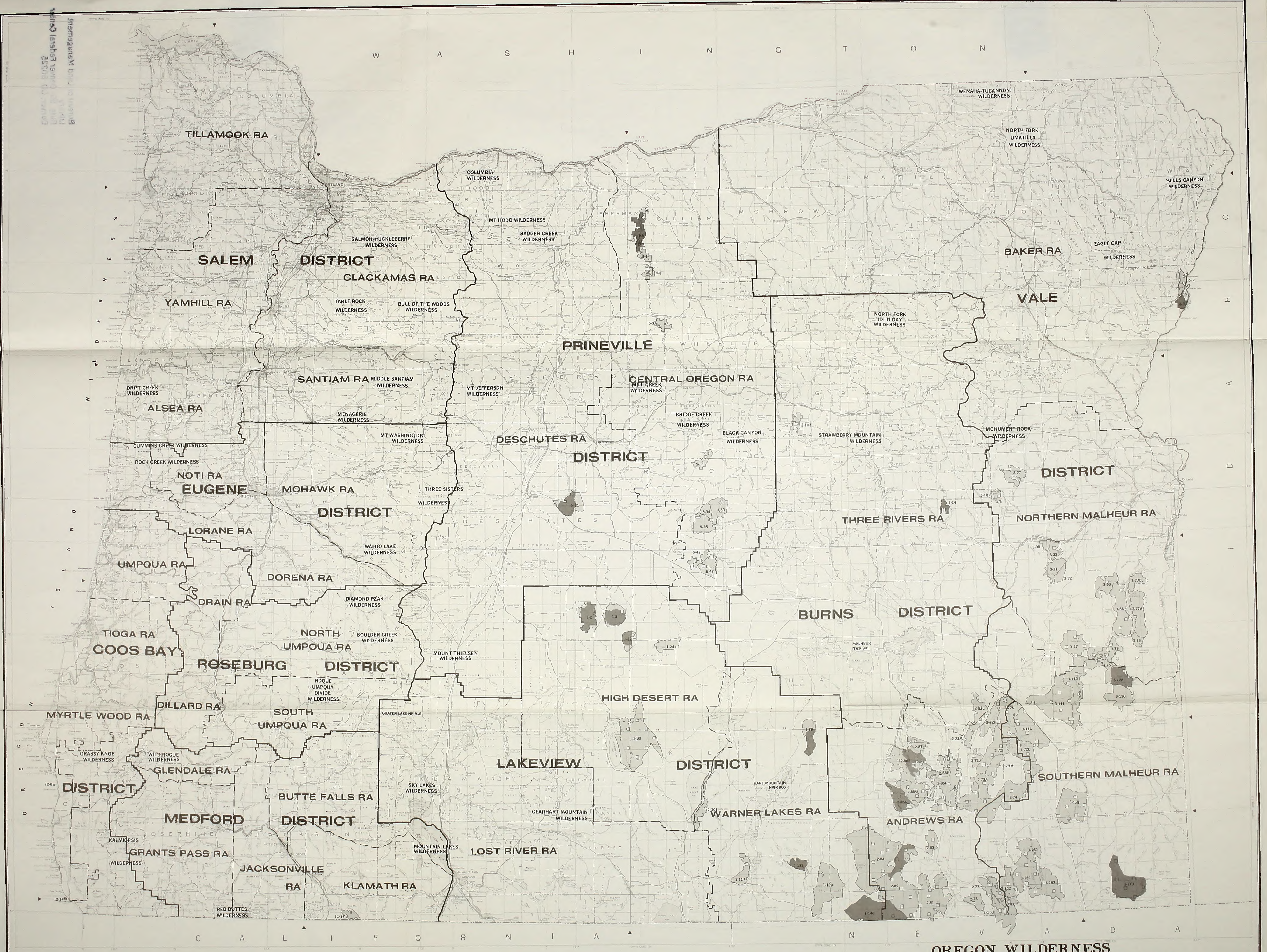
1985

Scale 1:1,000,000

1 inch equals Approximately 16 miles

MAP 5

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT



LEGEND

▨ WSA Under Study in this EIS

■ Area Recommended Suitable for Wilderness Designation

OREGON WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

COMMODITY DEVELOPMENT EMPHASIS ALTERNATIVE

1985

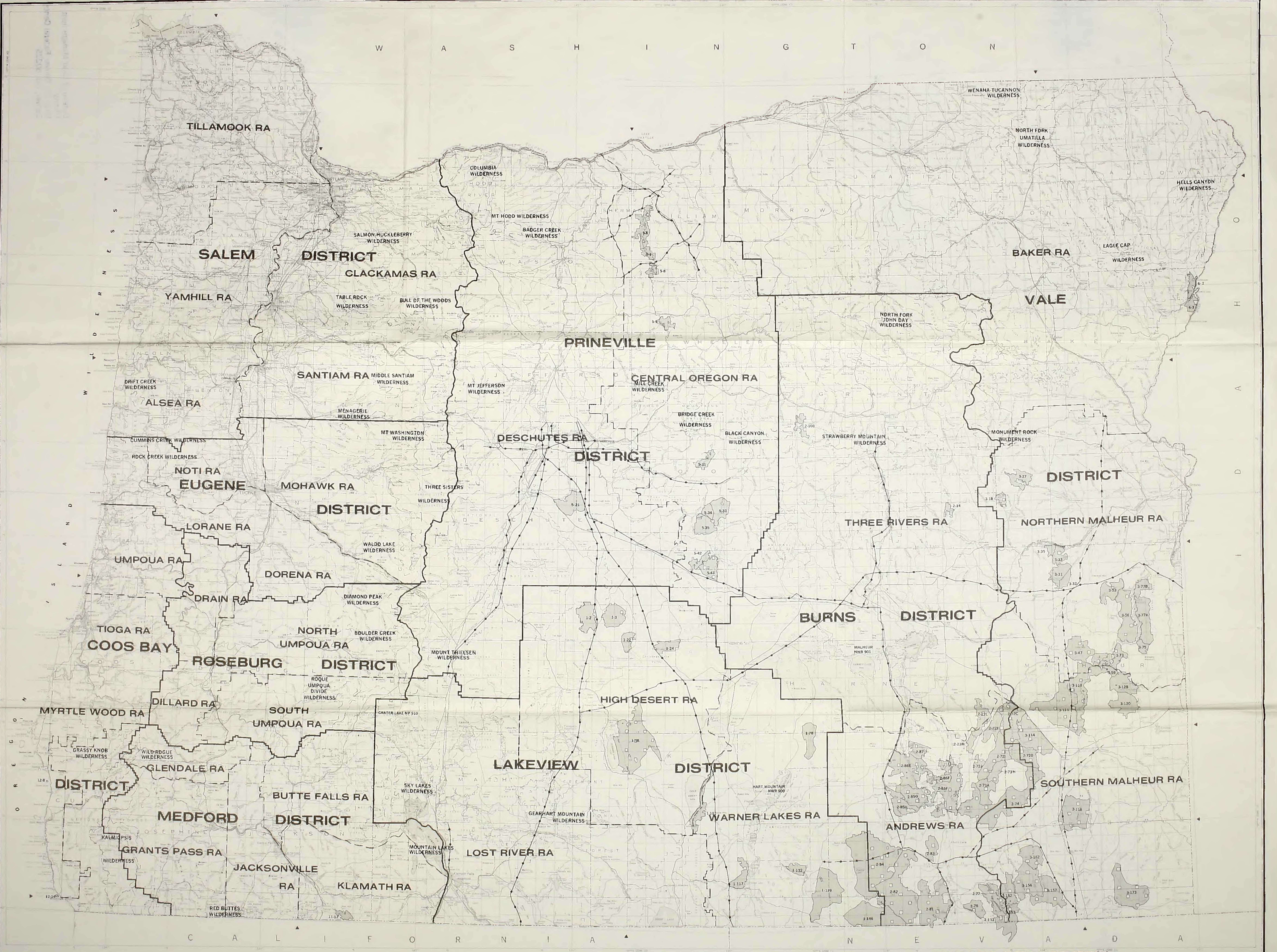
Scale 1:1,000,000
1 inch equals Approximately 16 miles

Note: WSA-specific maps are located in each appendix

MAP 6

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

BASE MAP BY U.S. GEOLOGICAL SURVEY



LEGEND

▨ WSA Under Study in this EIS

—•— Existing Utility Corridors

— — Proposed Utility Corridors

OREGON WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

EXISTING AND PROPOSED UTILITY CORRIDORS IN OR NEAR THE WSAs

1985

Scale 1:1,000,000

1 inch equals Approximately 16 miles

BASE MAP BY U.S. GEOLOGICAL SURVEY

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

MAP 7